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CORONA J

PERFORMANCE EVALUATION REPORT

MISSION 1044-1 and 1044-2

FTV 1639, J-41

Approved [redacted] Manager
Advanced Projects

Approved [redacted] Manager

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INTRODUCTION

This report presents the final performance evaluation of Missions 1044-1 and 1044-2 of the Corona Program. The purpose of this report is to define the performance characteristics of the J-41 payload system and to identify the source of in-flight anomalies.

The performance evaluation was jointly conducted by representatives of Lockheed Missiles and Space Company (LMSC) and ITEK at the facilities of NPIC and AFSPPF. The off-line evaluation using Corona engineering photography acquired over the United States was performed at the individual contractors plants.

The quantitative data used for this report is obtained from government organizations. The diffuse density data, and MTF/AIM resolution are produced by AFSPPF. The vehicle attitude error values, frame correlation times are made at NPIC who also supply the Processing Summary reports published by [redacted]

Computer programs developed by A/P are utilized to calculate and plot the frequency distribution of the various contributors to image smear to permit analysis and correlation of the conditions of photography to the information content and quality of the acquired pictures. Computer analysis of the exposure, processing and illumination data provides the necessary data to analyze the exposure criteria selected for the mission.

This report contains certain data summarized from [redacted] Processing Summary, [redacted] and from AFSPPF TERO Report [redacted]

SECTION 1

SYSTEM PERFORMANCE

A. MISSION OBJECTIVES

The payload section of Mission 1044, placed into orbit by Flight Test Vehicle #1639 and THORAD Booster #513, consisted of two panoramic cameras, two Stellar-Index cameras, two Mark 5A recovery capsules and a space structure to enclose the cameras and provide mounting surfaces for all equipment. Figure 1-1 presents an inboard profile of the J-41 payload system. This Corona "J" system is designed to acquire search and reconnaissance photography of selected areas of the earth from orbital altitudes. A seven day -1 mission and a seven day -2 mission was planned.

B. MISSION DESCRIPTION

The payload was launched from Vandenberg Air Force Base (VAFB) at 2131:19Z(1331:19 PST) on 2 November 1967. Ascent and injection were normal and the achieved orbit was within nominal tolerances. Tracking and command support was effected by the Air Force Satellite Control Facility consisting of tracking and command stations at [redacted] under central control of the Satellite Test Center at Sunnyvale, California. Mission 1044-1 consisted of a 6 day operation and was completed by air recovery on 8 November 1967. Mission 1044-2 was completed with an air recovery on 11 November 1967 following a 3 day photographic operation. The very short -2 mission was precipitated by a potential failure in the lifeboat system.

The comparison of the planned and actual orbit parameters is tabulated as follows:

ORBITAL PARAMETERS

Parameter	Predicted	Orbit 110 Actuals
Period (Min.)	90.47	90.333
Perigee (N.M.)	99.876	99.531
Apogee (N.M.)	223.750	219.940
Inclination (Deg.)	81.5	81.539
Perigee Latitude (Deg. N.)	19.24	33.816
Eccentricity	0.017191	0.01673

A single OAS rocket was fired on Rev 4, Rev 17, and Rev 113. These rocket firings produced the following results:

OAS ROCKET PERFORMANCE

OAS Rocket	Velocity Gained
#1	+ 16.2 FPS
#2	+ 15.7 FPS
#3	+ 17.5 FPS

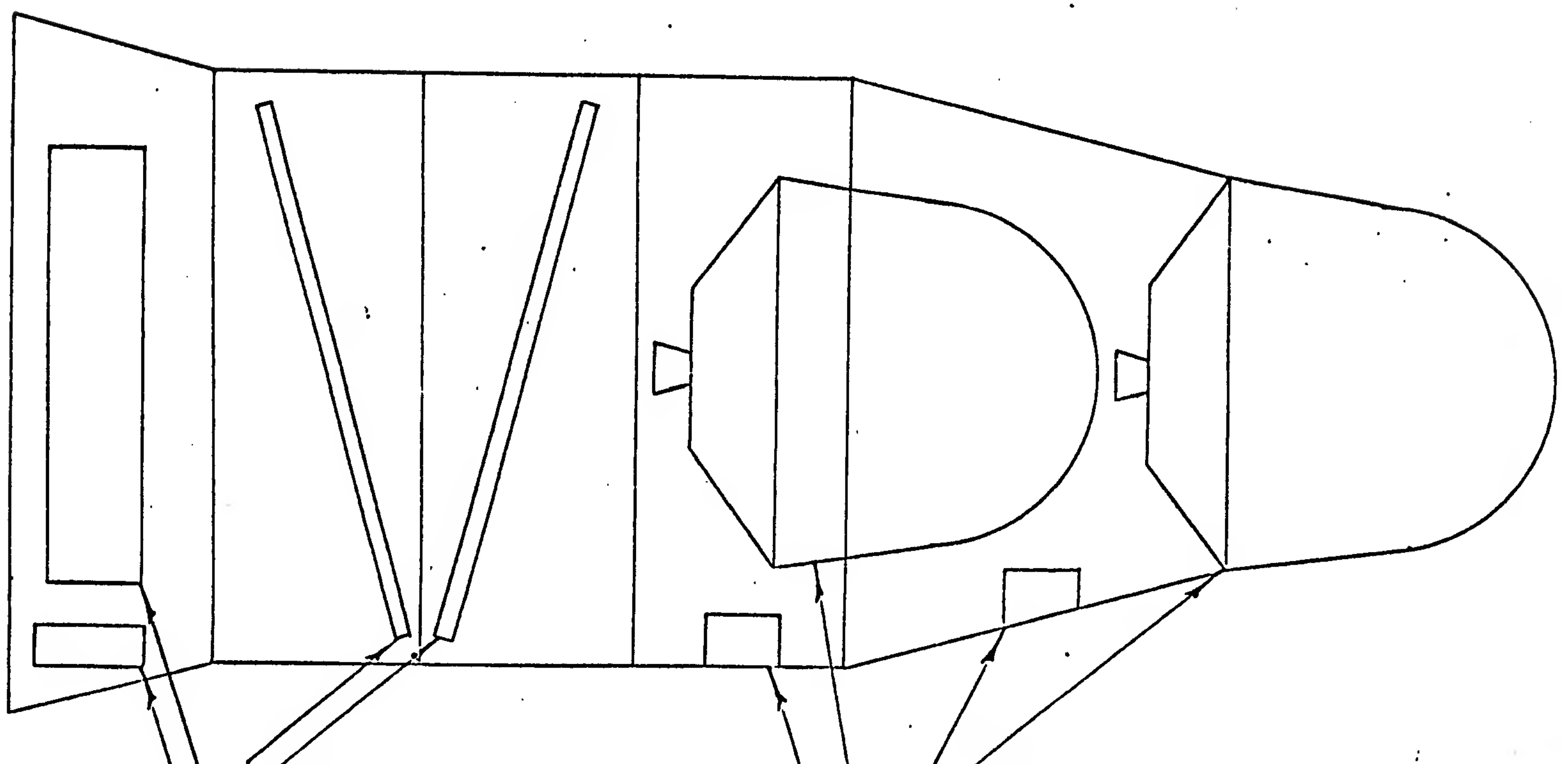
C. PANORAMIC CAMERAS

Both instruments operated satisfactorily throughout both missions, and produced good image quality except for minor bands of image smearing near the takeup and on many frames. The imagery was very sharp, and verified the validity of the new focus settings.

SCHEMATIC INBOARD PROFILE - CORONA J-41 SYSTEM

MISSION 1044

[redacted]



Master Camera No: 202

Slave Camera No: 203

Supply Cassette No: SC-5[illegible]

Clock No: 606

Yaw Programmer No: 465

"A" Recovery Subsystem No: 7[illegible]

"A" Stellar-Index Camera No: D[illegible]/12[illegible]/12[illegible]

"B" Recovery Subsystem No: 7[illegible]4

"B" Stellar-Index Camera No: D[illegible]/1[illegible]/1[illegible]1

Pressure Make-up Unit No: 1[illegible]

FIGURE 1-1

[redacted]

D. STELLAR-INDEX CAMERAS

Both the "A" and "B" S/I's operated satisfactorily and most Stellar images appear as points rather than the usual odd shaped stars.

E. OTHER SUB-SYSTEMS

The clock, instrumentation, pressure make-up, command and thermal control subsystems performed satisfactorily.

F. COMPONENT IDENTIFICATIONS AND SETTINGS

1. MASTER PANORAMIC CAMERA

a. COMPONENT ASSIGNMENT

Component	Serial Number
Main Camera	202
Main Camera Lens	2042435
Supply Horizon Camera	308-G6
Supply Horizon Camera Lens	12889
Take-up Horizon Camera	318-G5
Take-up Horizon Camera Lens	12886
Supply Cassette	SC-50

b. CAMERA DATA AND FLIGHT SETTINGS

Main Camera:

Lens	24"f/3.5
Slit Width	0.225"
Filter Type	Wratten 23A
Film Type	Eastman Type 3404

Supply (Port) Horizon Camera:

Lens	55 mm f/6.3
Aperture Setting	f/6.3
Exposure Time	1/100 second
Filter Type	Wratten 25

Take-up (Starboard) Horizon Camera:

Lens	55 mm f/6.3
Aperture Setting	f/8.0
Exposure Time	1/100 second
Filter Type	Wratten 25

2. SLAVE PANORAMIC CAMERA

a. COMPONENT ASSIGNMENT

Component	Serial Number
Main Camera	203
Main Camera Lens	2162435
Supply Horizon Camera	299-G6
Supply Horizon Camera Lens	12903
Take-up Horizon Camera	297-G5
Take-up Horizon Camera Lens	12883
Supply Cassette	SC-50

b. CAMERA DATA AND FLIGHT SETTINGS

Main Camera:

Lens	24"f/3.5
Slit Width	0.175"
Filter Type	Wratten 21
Film Type	Eastman Type 3404

Supply (Starboard) Horizon Camera:

Lens	55 mm f/6.3
Aperture Setting	f/8.0
Exposure Time	1/100 second
Filter Type	Wratten 25

Take-up (Port) Horizon Camera:

Lens	55 mm f/6.3
Aperture Setting	f/6.3
Exposure Time	1/100 second
Filter Type	Wratten 25

3. MISSION 1044-1 STELLAR-INDEX CAMERA

a. COMPONENT ASSIGNMENT

Component	Serial Number
Camera	D-99
Index Reseau	122
Stellar Reseau	120

b. CAMERA DATA AND FLIGHT SETTINGS

Stellar Camera:

Lens	85 mm f/1.8
Exposure Time	1 second
Filter Type	None
Film Type	Eastman Type 3401

Index Camera:

Lens	38 mm f/4.5
Exposure Time	1/500 second
Filter Type	Wratten 21
Film Type	Eastman Type 3400

4. MISSION 1044-2 STELLAR-INDEX CAMERA

a. COMPONENT ASSIGNMENT

Component	Serial Number
Camera	D-104
Index Reseau	132
Stellar Reseau	131

b. CAMERA DATA AND FLIGHT SETTINGS

Stellar Camera:

Lens	85 mm f/1.8
Exposure Time	1 second
Filter Type	None
Film Type	Eastman Type 3401

Index Camera:

Lens	38 mm f/4.5
Exposure Time	1/500 second
Filter Type	Wratten 21
Film Type	Eastman Type 3400

SECTION 2

PRE-FLIGHT SYSTEMS TESTS

As a standard procedure, the J payload systems are subjected to a series of tests which demonstrates a satisfactory level of confidence that the systems will indeed perform as required in their respective missions. The tests include and operational-type exposure to simulate thermal/altitude environment, a light-leak evaluation, and a dynamic measure of the photographic performance capabilities. Significant baseline levels and anomalies experienced with this system during the pre-flight testing are as follows:

A. ENVIRONMENTAL TEST

The J-41 payload system was subjected to an environmental HIVOS Chamber test from August 15 through August 19, 1966, and from August 27 through September 1, 1966. The interruption was caused by the actuation of a camera failsafe control during the cut and wrap sequence.

Except for some minor acceptable corona marking, the panoramic instruments performed satisfactorily. The Master camera failsafe was activated at the cut and wrap sequence when the film jammed in the felt seal preventing take-up into the "B" SRV. The failure was attributed to a combination of a misaligned "B" take-up cassette, and the vertical attitude of the camera system during the sequence which permitted the cut film to fall back and jam in the felt door opening.

The clock accuracy was satisfactory, except for one correlation that was outside of the accepted tolerance range.

The pressure make-up system operated normally. During PMU operate, internal pressure increased to 37-39 microns. Gas consumption was as high as 7.45 lbs/min. during -2 portion of the test.

The command system functioned properly for both bucket tests with no evidence of any equipment malfunctions.

B. RESOLUTION TEST

Initial resolution and theodolite tests were performed on 20 September 1966. Results of the thru-focus resolution tests of pan instruments 202 and 203 show the following characteristics:

Master Pan Instrument No. 202

Maximum high contrast resolution 175 lines/mm at -0.002 focal position.

Maximum low contrast resolution 115 lines/mm at -0.002 focal position

Slave Instrument No. 203

Maximum high contrast resolution 176 lines/mm at +0.001 focal position.

Maximum low contrast resolution 112 lines/mm at +0.001 focal position.

Additional Boston investigations indicated that optimum focus position would be attained by adding 0.002" shim to the scan head of the Slave instrument, and 0.001" shim to the Master instrument. The modified instruments were retested 22 October 1967, with the following results:

Master Pan Instrument No. 202

Maximum high contrast resolution 183 lines/mm at -0.0025 focal position.

Maximum low contrast resolution 120 lines/mm at -0.0020 focal position.

Slave Pan Instrument No. 203

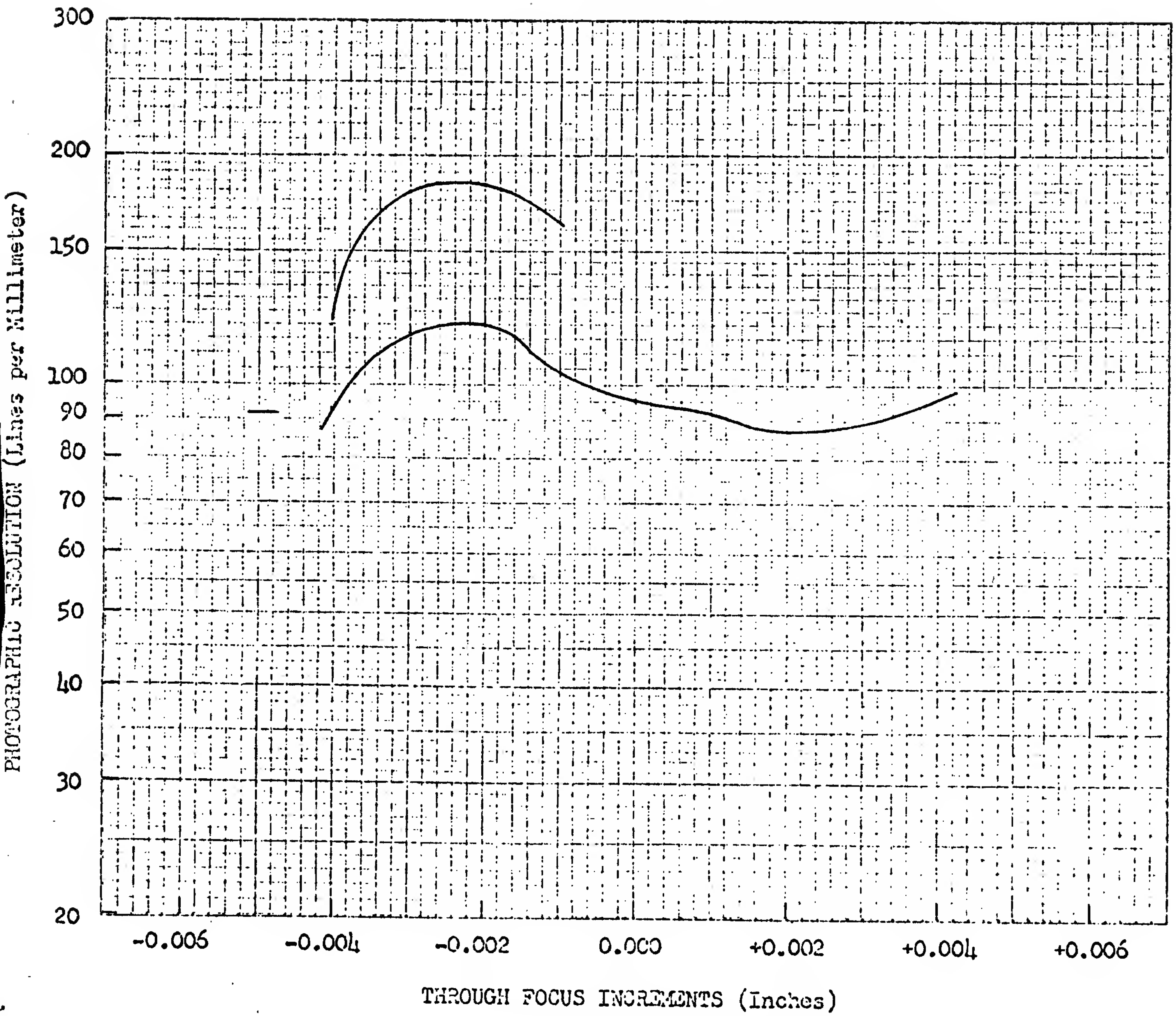
Maximum high contrast resolution 185 lines/mm at -0.0015 focal position.

Maximum low contrast resolution 118 lines/mm at -0.0020 focal position.

The final test data for both instruments is shown in Figures 2-1 and 2-2. Both instruments met the system requirements specification.

[redacted]

PRE-FLIGHT DYNAMIC RESOLUTION



Camera No: 202

Payload No: J-41

Resolution (l/mm)

High Contrast: 183

Low Contrast: 120

Film Type: 3404

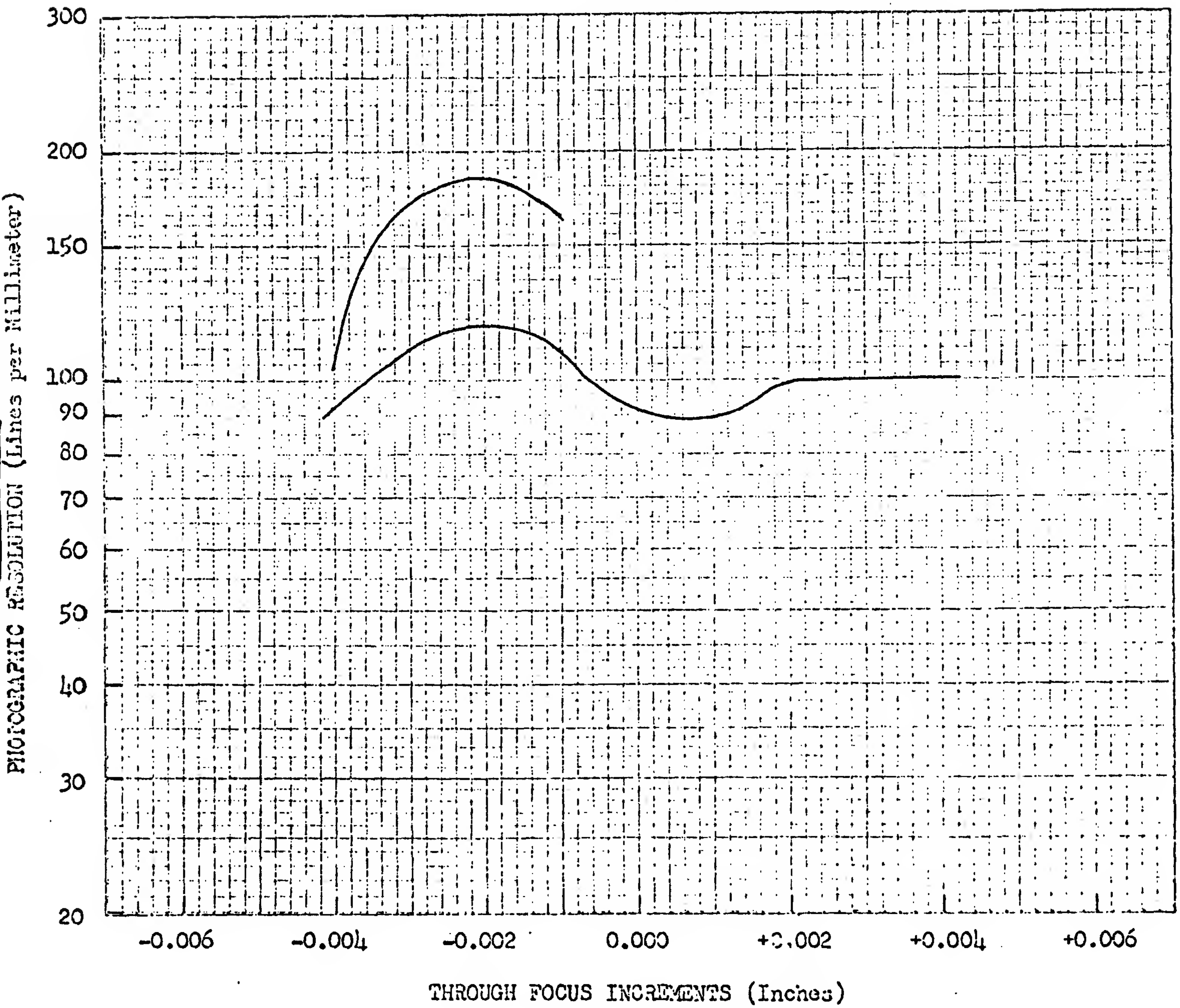
Test Date: 22 Oct. 1967

FIGURE 2-1

[redacted]

TOP SECRET C [redacted]

PRE-FLIGHT DYNAMIC RESOLUTION



Camera No: 203

Payload No: J-41

Resolution (1/mm)

High Contrast: 185

Low Contrast: 118

Film Type: 3404

Test Date: 22 Oct. 1967

FIGURE 2-2

C [redacted]

C. LIGHT LEAK TEST

The J-41 system was tested for light leaks on 12 August 1966, revealing major leaks at three of the four H.O. boot installations and at the Agena interface cover. Photomultiplier sensing techniques were used to verify the validity of repairs made.

D. FLIGHT LOADING AND CERTIFICATION

Loading of flight film was accomplished on 24 October 1967, and final pre-flight acceptance tests performed 25 October 1967. All functions were nominal, with no indications of light leaks or other sources of performance degradation.

SECTION 3

FLIGHT OPERATIONS

A. SUMMARY

Ascent through Agena ignition was nominal. The Agena engine "coughed" at approximately 128 seconds after Agena ignition and combustion chamber pressure was reduced during the last period of engine burn. The engine burned approximately 5 seconds longer than nominal. A hard engine shut-down was confirmed.

The achieved orbit parameters were low, but were within the three (3) sigma dispersions.

Both panoramic cameras operated satisfactorily throughout the flight.

Both Stellar/Index cameras operated satisfactorily throughout the flight.

The instrumentation system, clock system, and the yaw function generator performed normally for the duration of the flight.

An intermittent anomaly in the Lifeboat system developed in the -2 mission, with the possible initiation of an unplanned recovery sequence. As a result, the mission was intentionally terminated as early as possible.

Several commanding problems were encountered during this flight while commanding in the repetitive mode.

B. PANORAMIC CAMERA PERFORMANCE

Both panoramic cameras operated normally throughout the flight. Camera system dynamic operation, 99/101 clutch operation, start-up, shut-down, and film transport functions were normal on all monitored passes.

The cut and wrap operation and transfer to the -2 system occurred as programmed utilizing the KIK-ZORRO 38 command (early A to B switchover) on Rev 88.

The panoramic film was exhausted on Rev 140 frame No. 25 and frame No. 60 on the Master and Slave cameras respectively.

Panoramic Film Consumption

	Actual Frames	
	Master	Slave
Pre-Launch	137	137
-1 Mission	2898	2880
-2 Mission	3011	3030
Total	6046	6047

FMC Match

The V/H ramp to orbit match was acceptable throughout the flight. The following settings of RTC 6, 8, and 10 were utilized to obtain the optimum FMC match during the flight.

	RTC Commands 6	8	10	REMARKS
RTC Positions	7	4	6	Launch thru Rev 3
	7	2	9	Rev 4 thru Rev 12
	6	3	9	Rev 13 thru Rev 16
	7	3	9	Rev 17 thru Rev 44
	8	2	8	Rev 45 thru Rev 65
	7	3	9	Rev 66 thru Rev 75
	8	2	9	Rev 76 thru Rev 91
	7	3	9	Rev 92 thru Rev 114
	7	3	10	Rev 115 thru the end of the mission

However, the design of the 1000-series ramp programmer limits this optimum FMC match to a nominal band of latitude defining areas of primary interest. The extensive operations over a wide range of latitude experienced in this mission (Ref. Figs. 5-5 to 5-10) increases the statistical deviation, as is evident in Figures 3-1 through 3-4.

FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 4.

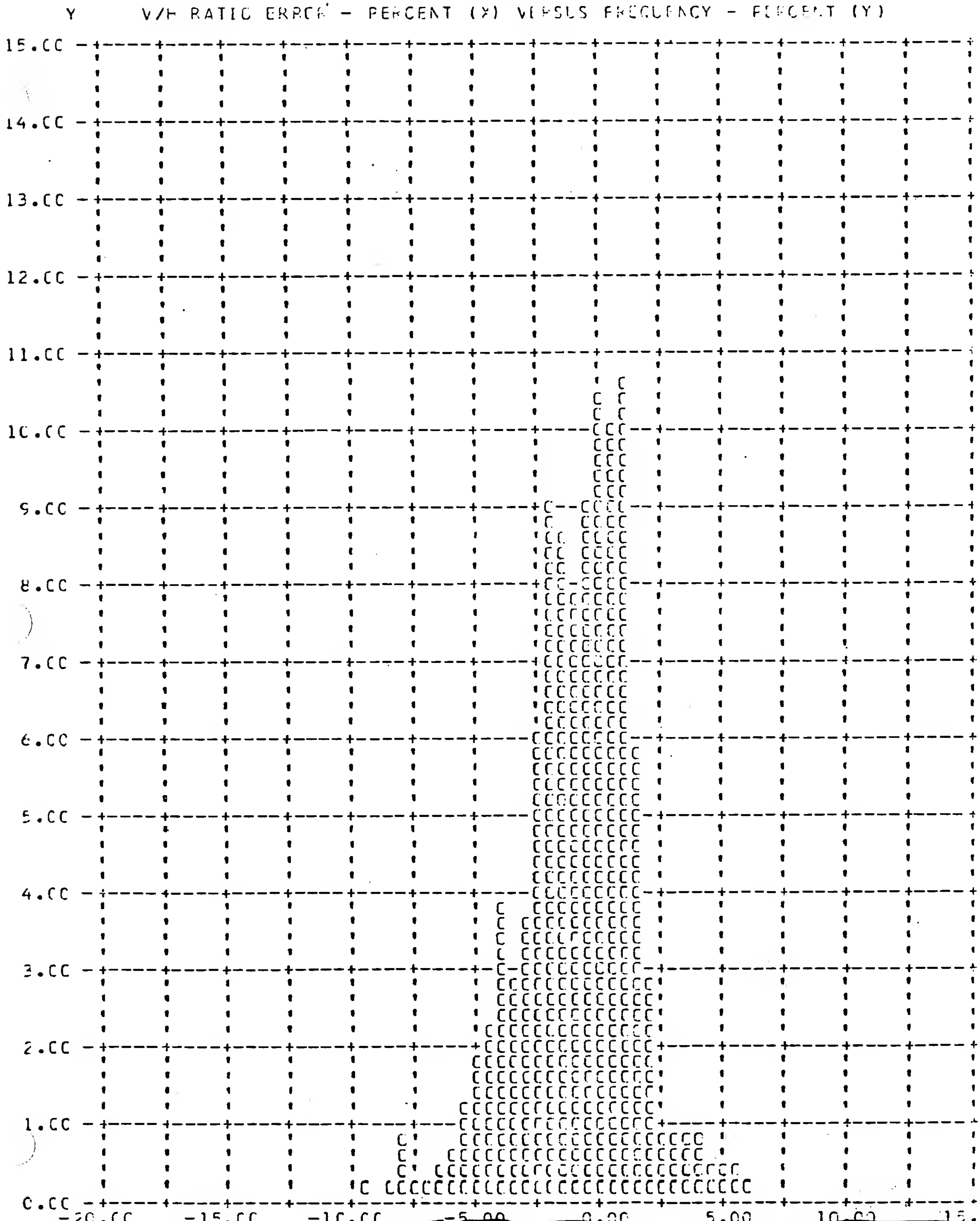
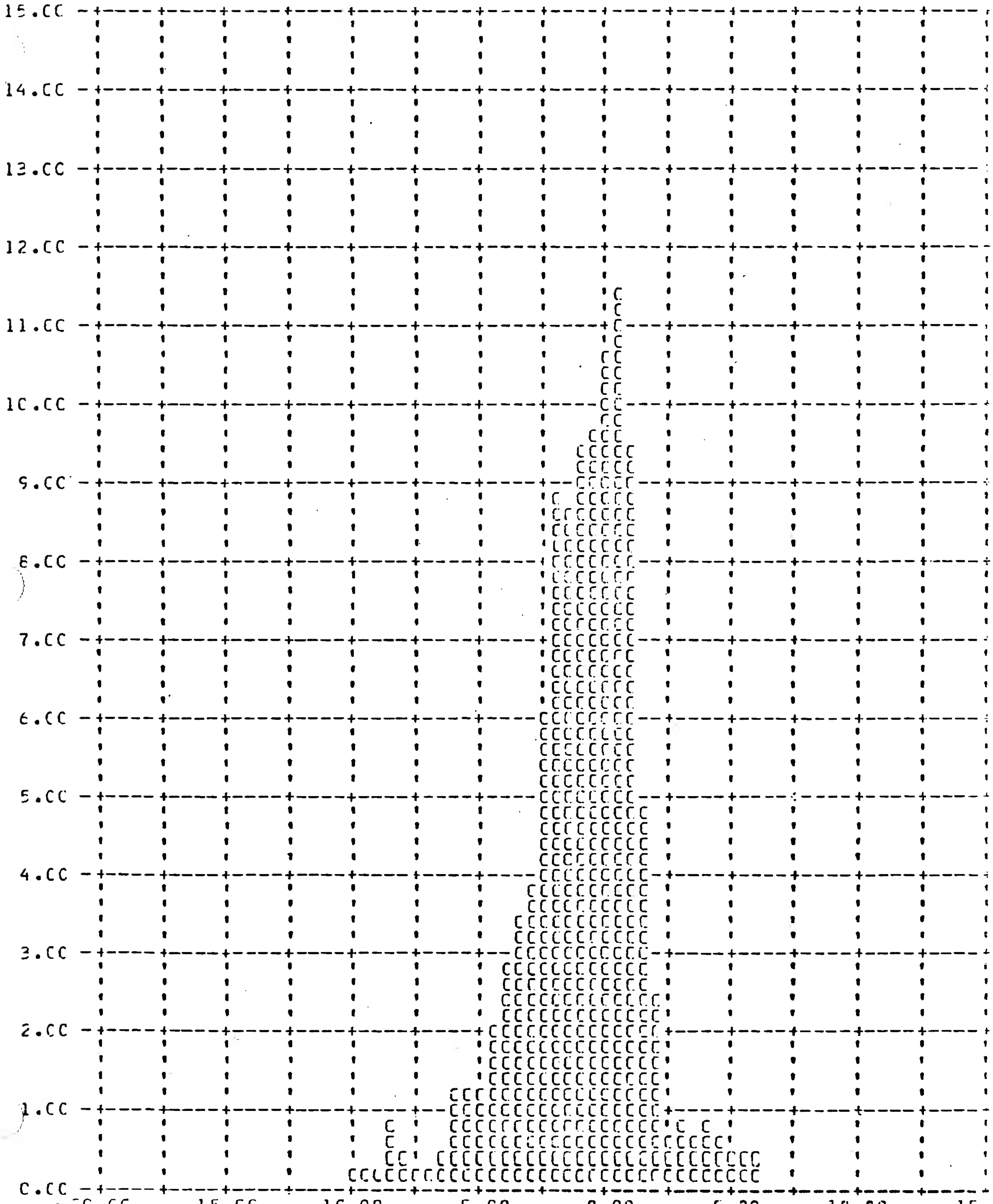


Figure 3-1

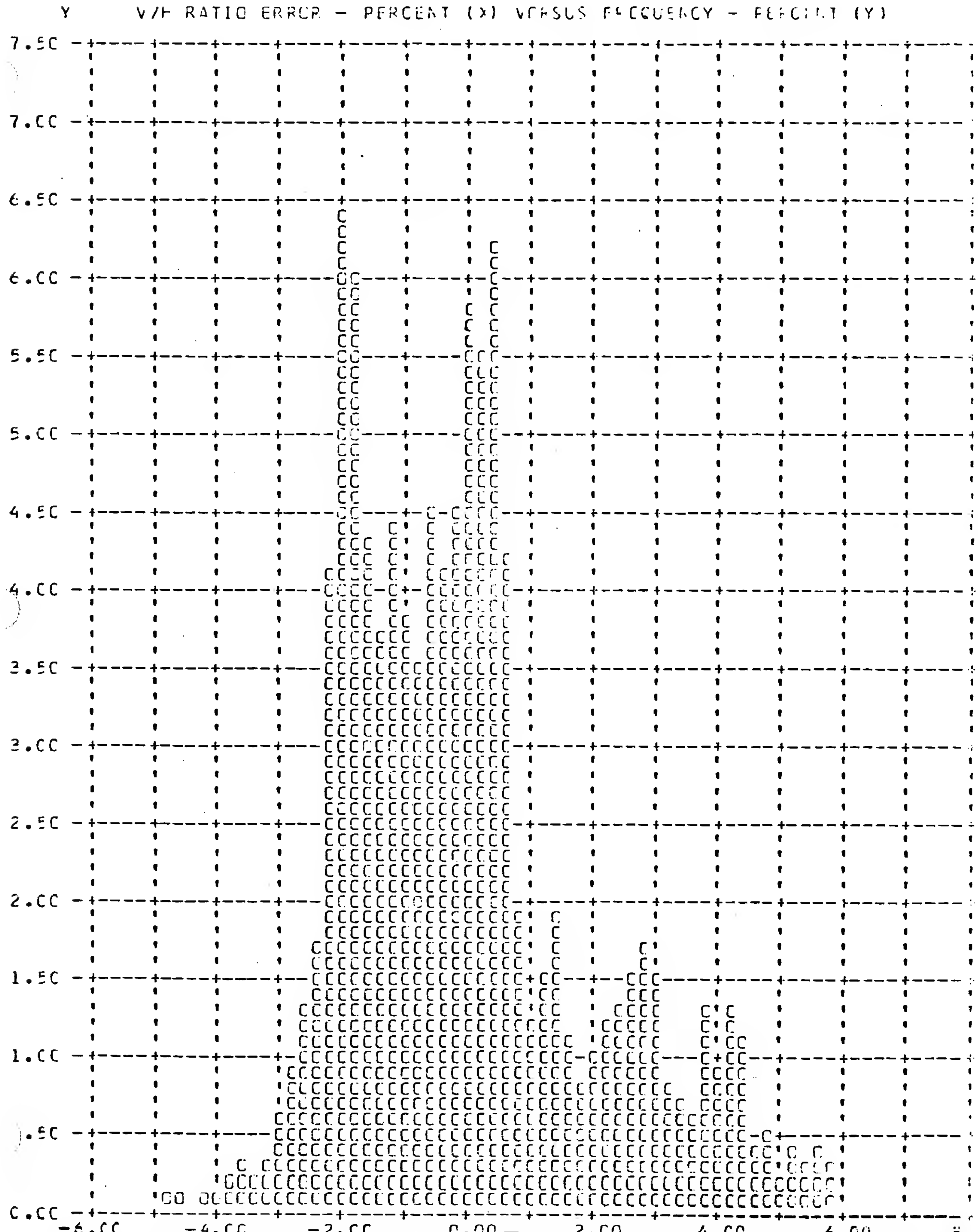
FRAMES 1-6 OF EACH CP OMITTED 90 PERCENT = 4.1

Y V/H RATIO ERROR - PERCENT (X) VERSUS FREQUENCY - PERCENT (Y)



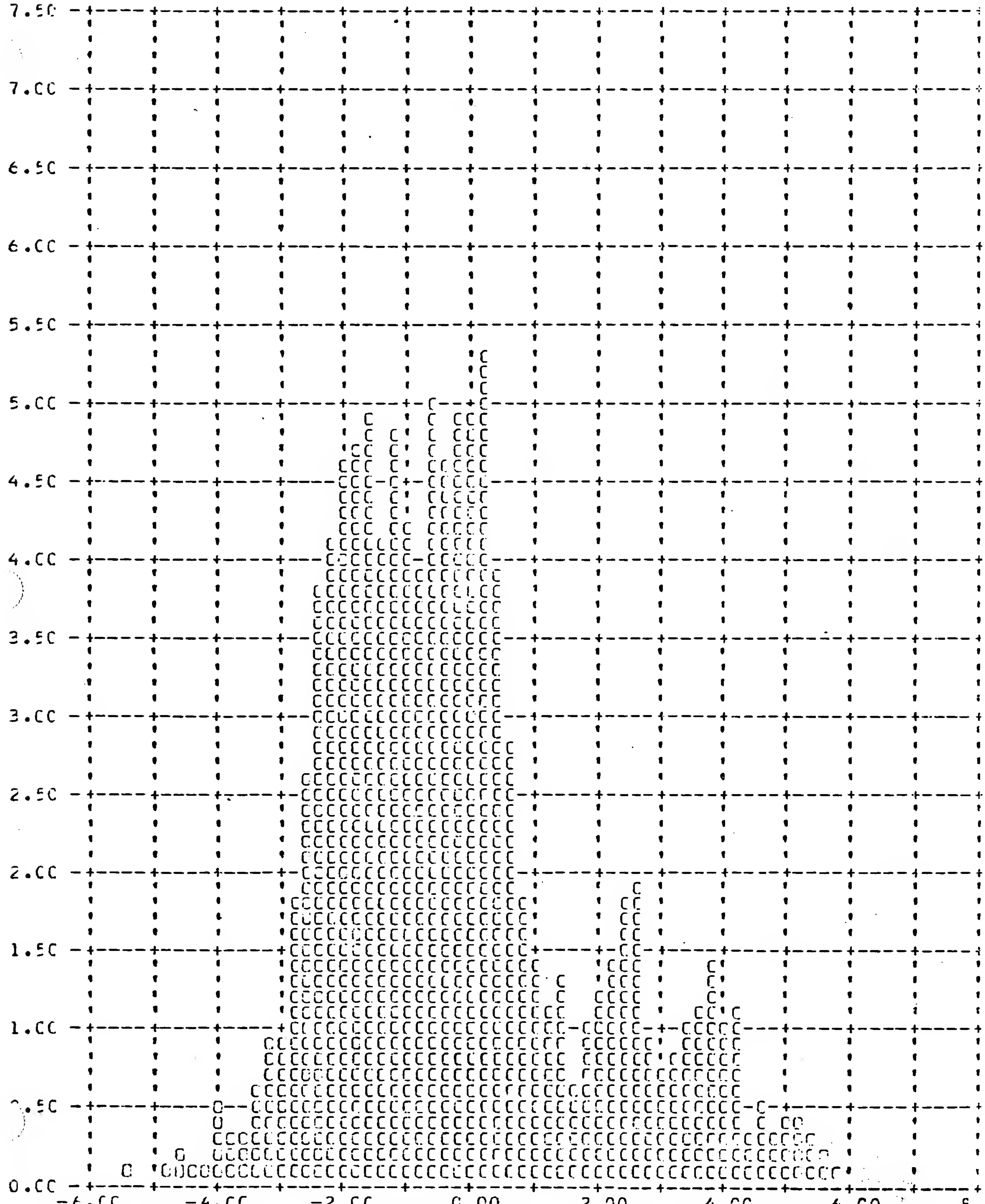
FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 3.

V/H RATIO ERROR - PERCENT (X) VERSUS FREQUENCY - PERCENT (Y)



MISSION 1044B2 ~~TOP SECRET~~ C/[redacted] - CONTROL NO. [redacted]
FRAMES 1-6 OF EACH OF OMITTED 90 PERCENT = 3.

Y V/H RATIO ERROR - PERCENT (X) VERSUS FREQUENCY - PERCENT (Y)



MISSION 1044B2 ~~TOP SECRET~~ C/[redacted] - CONTROL NO. [redacted]

Figure 3-4

C. STELLAR/INDEX CAMERA PERFORMANCE

Both the -1 and -2 Stellar/Index cameras operated satisfactorily on all monitored engineering passes. Telemetry data indicated the programmer, metering functions, and shutter monitors performed satisfactorily.

D. INSTRUMENTATION AND COMMAND SYSTEM PERFORMANCE

The instrumentation system performed normally throughout the total mission.

The command system performance was satisfactory for both missions. However, numerous command anomalies were encountered during the mission when real time commanding (RTC) was performed in the repetitive mode. Analysis indicated that the RTC commands issued at the [redacted] showed erratic command duration times. It was recommended that the command generation equipment be verified for proper operation.

One RTC 9 was missed on Rev 56 [redacted] while transmitting in the repetitive mode. The A/P stepper also failed to advance on two correctional commands and a third command was required to place the A/P stepper in the proper position. Analysis indicates that the stepper failed to respond to the issued command. A specific cause of this anomaly could not be determined from the available data. However, this command box was checked prior to shipment for proper command response time to command durations of 65 milliseconds and the system functioned normally.

E. CLOCK SYSTEM PERFORMANCE

The clock system operation was normal for the entire mission. Satisfactory time correlation between the flight clock and the [redacted] was obtained. The ratio of clock time to system time was 1:00000026563.

F. PRESSURE MAKE-UP SYSTEM PERFORMANCE

The pressure make-up system performance was normal for the duration of the mission. Average gas consumption was approximately 8.4 Δ PSI/min for the 240 minutes of total operate time. The system had a reserve of 620 PSI at the end of the flight.

G. THERMAL ENVIRONMENT

The thermal control pattern on this payload system was modified prior to launch to produce a thermal environment of $75 \pm 10^{\circ}$F.

Temperature data from the [redacted] acquisitions are included in Tables 3-1 and 3-2. The average instrument temperatures ranged from a high of 85°F. and 86°F. to low of 68°F. and 68°F. on the Master and Slave instruments respectively.

H. YAW PROGRAMMER

The vehicle Yaw Programming functioned properly throughout the mission. However, because of pre-flight programming error which placed the function start pulse approximately 800 seconds late, the Yaw attitude achieved was approximately 55 Degrees out of phase with the desired profile. A more complete description of this function and its effect on mission performance is presented in Sections 4, 7 and 8.

[illegible]
[illegible] SUMMARY
[illegible] - [illegible]

VEHICLE [illegible]

SENSOR

ORBITS ACQUIRED

Sensor	8	16	24	32	40	47	56	63	72	79	[illegible]	95	103	111	[illegible]	[illegible]
[illegible]/Barrel #1 ("A") ("B")																
1	55	32	36	[illegible]	29	32	49	26	26	26	49	26	24	24	[illegible]	24
2	16	-4	6	-4	0	[illegible]	16	-4	0	-4	16	-4	62	45	40	40
3	2	2	-1	-5	-12	2	6	2	-7	-1	2	2	75	62	52	75
4	54	48	48	41	41	45	54	44	38	41	54	48	51	51	[illegible]	54
5	77	64	64	55	55	55	74	55	51	51	71	51	40	48	23	37
6	79	75	57	60	50	69	72	60	47	57	69	54	--	--	--	--
Barrel No. 2																
1	65	77	52	71	46	66	59	65	43	59	55	59	40	43	23	[illegible]
2	72	65	52	61	45	67	62	78	43	78	62	75	56	45	33	57
3	67	65	61	67	55	65	73	79	59	62	76	65	70	[illegible]	51	75
4	64	58	54	45	48	51	67	45	51	42	61	51	57	42	45	42
5	61	57	51	51	45	54	61	51	48	51	57	57	33	26	[illegible]	21
[illegible]																
1	76	70	63	63	57	63	70	60	50	54	66	57	50	37	34	31
[illegible]																
1	102	93	96	95	90	90	93	82	79	76	85	79	79	67	63	[illegible]
2	100	86	84	80	85	85	102	84	[illegible]	80	75	[illegible]	[illegible]	71	[illegible]	[illegible]
[illegible]																
1	83	81	71	77	75	81	85	79	75	80	81	79	7[illegible]	63	[illegible]	[illegible]
2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
[illegible] "A" to "B"																
1 ([illegible])	47	39	41	36	[illegible]	[illegible]	44	37	36	37	[illegible]	37	[illegible]	[illegible]	25	5
2 ([illegible])	76	62	63	57	57	55	[illegible]	56	[illegible]	57	56	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] "A" [illegible]																
2	67	64	65	64	65	63	65	69	[illegible]	66	66	[illegible]	--	--	--	--
[illegible] "B" [illegible]																
1	71	[illegible]	[illegible]	63	65	70	65	69	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	61	[illegible]	[illegible]

[redacted]

[redacted]

REAL [illegible]E DATA
TEMPERAT[illegible] SUMMARY
[illegible] - FAIR

PAYLOAD [illegible]

VEHICLE [illegible]

SENSOR — ORBITS ACQUIRED

Master	8	16	24	32	40	47	56	63	72	7[illegible]	[illegible]	95	103	111	119	12[illegible]	1[illegible]
3	76	73	75	73	72	73	75	72	71	71	74	72	66	63	62	61	[illegible]
4	73	76	76	75	76	76	76	74	74	75	77	74	72	[illegible]	66	64	[illegible]
5	[illegible]	84	87	83	84	83	86	82	82	81	84	82	78	72	73	71	[illegible]
6	[illegible]	86	86	84	85	84	86	82	82	81	83	81	77	72	71	71	72
7	86	85	84	83	82	82	82	81	80	80	81	81	75	70	69	[illegible]	71
8	86	84	86	84	85	83	86	82	81	81	84	82	79	72	74	71	75
9	93	87	90	87	86	86	89	85	85	84	88	84	82	74	76	75	74
11	86	85	84	85	83	82	84	81	81	80	83	75	77	66	70	67	72
12	80	78	80	77	75	76	79	76	77	76	79	76	74	67	69	[illegible]	72
13	86	84	85	83	82	83	82	80	79	80	80	77	73	70	[illegible]	[illegible]	[illegible]
AVG. [illegible] TEMP.	85	82	84	81	82	81	83	7[illegible]	81	76	81	7[illegible]	72	6[illegible]	70	[illegible]	7[illegible]
Slave																	
3	91	86	88	85	87	84	[illegible]	82	83	81	84	81	77	[illegible]	[illegible]	67	76
4	90	82	88	85	86	82	80	81	81	80	85	[illegible]	72	72	72	69	[illegible]
5	85	81	85	81	83	81	84	80	81	80	83	76	75	72	72	71	[illegible]
6	81	74	79	74	77	78	77	77	76	77	7[illegible]	77	72	[illegible]	[illegible]	[illegible]	[illegible]
7	86	85	[illegible]	85	84	83	84	83	82	82	83	[illegible]	77	73	71	71	70
8	86	82	85	82	83	81	84	81	82	[illegible]	84	[illegible]	77	70	72	[illegible]	72
9	82	79	82	80	81	80	82	77	81	79	82	79	76	70	70	[illegible]	72
11	84	77	76	76	7[illegible]	77	80	77	76	76	[illegible]	[illegible]	76	67	[illegible]	[illegible]	[illegible]
12	82	84	80	83	[illegible]	83	[illegible]	82	79	81	[illegible]	81	[illegible]	7[illegible]	74	[illegible]	[illegible]
13	82	75	77	74	77	7[illegible]	[illegible]	77	75	76	77	7[illegible]	76	[illegible]	[illegible]	[illegible]	[illegible]
AVG. [illegible] TEMP.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	81	[illegible]	[illegible]	[illegible]	76	[illegible]	7[illegible]	[illegible]	[illegible]
Supply Spool																	
1	72	72	73	73	73	74	77	74	74	[illegible]	73	[illegible]	70	[illegible]	[illegible]	[illegible]	[illegible]
2	86	76	80	77	75	76	82	77	75	[illegible]	83	77	75	67	67	[illegible]	[illegible]

[redacted]

REAL [illegible] DATA
TEMPERAT[illegible] SUMMARY
[illegible] - FAIR

PAYLOAD [illegible]

VEHICLE [illegible]

SENSOR

ORBITS ACQUIRED

[illegible]	8	16	24	32	40	47	56	63	72	7[illegible]	[illegible]	95	103	111	119	12[illegible]	[illegible]	[illegible]
3	76	73	75	73	72	73	75	72	71	71	74	72	[illegible]	63	62	[illegible]	[illegible]	[illegible]
4	76	76	76	75	76	76	76	74	74	75	77	74	72	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	64	67	65	64	63	66	62	62	61	64	62	79	72	73	71	[illegible]	[illegible]
6	[illegible]	66	63	64	65	64	66	62	62	61	63	61	77	72	71	71	72	7[illegible]
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9	93	87	90	87	86	86	89	85	86	84	88	84	82	74	76	75	76	[illegible]
11	86	85	84	85	83	82	84	81	81	80	83	76	77	66	70	67	71	[illegible]
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AVG. [illegible] TEMP.	85	82	84	81	82	81	83	7[illegible]	81	76	81	7[illegible]	79	[illegible]	70	[illegible]	[illegible]	[illegible]
[illegible]																		
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12	72	84	80	83		[illegible]	[illegible]	82	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7	74	[illegible]	[illegible]	[illegible]
13	82	79	77	76	77	[illegible]	[illegible]	77	7[illegible]	7[illegible]	77	7	76	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AVG. [illegible] TEMP.	[illegible]	[illegible]	[illegible]	[illegible]	7[illegible]	[illegible]	[illegible]	[illegible]	81	[illegible]	[illegible]	[illegible]	76	[illegible]	7[illegible]	[illegible]	[illegible]	[illegible]
[illegible]																		
1	72	72	73	73	73	74	77	74	74	81	76	7[illegible]	70	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	80	76	80	77	79	76	82	77	79	79	81	77	75	67	67	[illegible]	[illegible]	[illegible]

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I. RECOVERY SYSTEM

An early switchover from the A to the B Recovery systems was performed on Pass 88, with all functions appearing normal. The 1044-1 recovery capsule was successfully recovered by air-catch on Rev 97 at 1608 PST on 9 November 1967. Capsule impact was approximately 50 N.M. south of the predicted impact. All available data has been analyzed and all functions appeared to have occurred normally. All re-entry events appeared normal and close to the predictions except for deceleration chute deployment which occurred 0.12 seconds late.

	Latitude	Longitude
Predicted	25° 56.4' N	165° 51.08' W
Actual	25° 06' N	165° 42' W

The intermittent failure of a relay in the "Lifeboat" system electronics during the 1044-2 mission resulted in several cases of inadvertent lifeboat timer starts as well as one case of power being applied to the primary recovery system. Because of the possibility of an uncontrolled recovery, the 1044-2 mission was terminated early. The 1044-2 recovery capsule was successfully recovered by air-catch on Rev 144 at 1509 PST on 11 November 1967. All re-entry events appeared normal and close to the predictions except for parachute cover off which occurred 1.97 seconds early. Capsule impact was close to nominal.

	Latitude	Longitude
Predicted	21° 0.56' N	154° 28.1' W
Actual	21° 5.0' N	154° 33.0' W

J. RADIATION DOSAGE

Each recovery system flown on a Corona mission contains a sealed packet of Eastman Type 3401 and Royal X Pan emulsions to determine the total radiation received at the take-up cassette. Both film types have been irradiated by LMSC at various levels and the base plus fog densities recorded after controlled processing.

Following recovery the film dosimeter packets are removed at A/P and processed with a pre-flight sample of the same film type and sensitometric control film. The resulting base plus fog density measurement of the dosimeter strips is used to ascertain the total radiation level. The table below presents the base plus fog readings for the dosimeter strips and the radiation level equivalents.

	Mission 1044-1		Mission 1044-2	
Emulsion	B + F Density	Radiation	B + F Density	Radiation
Type 3401	0.22	0.9 R	0.25	1.3 R
Royal X Pan	0.27	0.5 R	0.30	0.6 R

These levels are below that which will degrade the photography.

SECTION 4

PHOTOGRAPHIC PERFORMANCE

A minimum of payload system photographic anomalies occurred during Missions 1044-1 and 1044-2, thus providing one of the most trouble-free flights to date. The image sharpness attained was considered equal to any previous Corona J-1 photography, permitting most imagery to be viewed at 60 x magnification. The overall image quality was judged to be generally good where not degraded by atmospheric attenuation; however, there was a predominance of cloud cover over the highest priority targets.

A. PANORAMIC INSTRUMENTS

The Master Camera produced 2898 frames (8049 feet) of photography during Mission 1044-1, and 3011 frames (7951 feet) during Mission 1044-2. The Slave camera produced 2880 frames (8009 feet) during Mission 1044-1, and 3030 frames (7963 feet) during Mission 1044-2. The quality of the photography produced by the two cameras was very similar, and was rated comparable to Mission 1035. The MIP Frames were rated 85.

The array of fixed resolution targets at Holloman AFB, New Mexico, were recorded during Mission 1044-2. The average system resolution of these targets was judged to be approximately eight feet for both instruments.

Both instruments exhibited characteristic anomalies, most objectionable of which was an appreciable build-up of emulsion particles. This condition was apparently accentuated by the very long operate times commanded during Mission 1044-2 so as to facilitate an early recovery. However, there appeared to be no significant reduction in information content because of this condition.

All auxiliary data recording functions operated normally throughout the flight, with the exception of missing binary data blocks on six occasions randomly over the missions. (Four occasions were on the forward camera, two on the aft). In each instance all of the other auxiliary data was present. This behavior was observed in pre-flight altitude testing, but was not considered detrimental so corrective action was waived.

The quality of the photography was adequate to readily identify intermittent bands of smearing near the takeup end of format caused by film flutter as the scan head enters the photographic format area. This anomaly is characteristic of instrument operation, and should be reduced considerably with the CR concepts.

It must be noted that this system was the first of the 1000-series to have the revised focus settings for a more precise compensation of the vacuum focal shift characteristics of the lenses used. Although there are many factors influencing the photographic quality achieved, it is reasonable to assume that the desirable performance of Mission 1044 verifies the validity of the new peak focus positions.

B. STELLAR/INDEX CAMERAS

The Stellar/Index film recovered consisted of 449 frames of photography from each film path of S/I D99/122/120 (Mission 1044-1), and 464 frames from each path of S/I D104/132/131 (Mission 1044-2). The cameras operated normally throughout the respective mission. There were 15 to 30 or more stellar images detectable on most frames despite a level of flare which affected approximately 50 percent of each frame. Most of the stellar images were good, and were point-type images. There was an appearance of Corona static marking occuring intermittently throughout the Mission 1044-2 stellar record.

The index cameras produced good quality imagery through each of the respective missions. The reseaus were sharp and well defined in both instruments. Several instances of dendritic static were recorded on the preflight, postflight and the last eight frames of the Mission 1044-2 index film.

C. OBSERVED DATA

Detailed evaluation of the engineering materials available at A/P indicated that the smearing effects from the V/h and yaw steering errors (see Section 8) did indeed create a detectable limitation to system performance in many instances in the mission. As predicted in the smear analysis, frames obtained with a large yaw steering error show a distinct disparity in quality between the forward and aft photography directly related to the difference in their exposure times.

When the ground smear contributions drop below some apparent threshold value (estimated to be approximately five feet for this system) on both instruments, the resulting forward and aft photography becomes very comparable and very good in quality. The Holloman AFB targets photographed during Pass 126 indicated approximately eight feet ground resolution for both instruments with a calculated theoretical smear of about $4\frac{1}{2}$ feet (which corresponds to a theoretical ground resolution limitation of $6\frac{1}{2}$ feet). In comparison, Pass 63 photography had noticeable disparity between forward and aft performance corresponding to relatively high smear values for the forward looking imagery (approximately $8\frac{1}{2}$ feet theoretical smear induced ground resolution limitation).

The mission processing summary indicated a major disparity in original negative development in several instances throughout the mission. Evaluation of engineering pass 125 indicated that the aft-looking record, which was processed at the primary development level, had a significant loss of detail and image quality when compared with the corresponding forward-looking photography which was processed at the full level. There was excellent cloud highlight definition in the aft photography, but the important ground and culture imagery was suppressed to the extent of a distinct loss in information content.

D. PERFORMANCE MEASUREMENTS

A summary of MTF/AIM resolution values measured by SPPF is tabulated below. The microdensitometer slit used was 1 micron by 80 microns.

Mission	Camera	Cycles/mm	Avg	Ground Resolution
1044-1	Fwd	78	70	15'
1044-2	Fwd	61		
1044-1	Aft	71	78	$13\frac{1}{2}$'
1044-2	Aft*	84		

*Samples from portion processed by dual gamma method

The details of the measurement and computing techniciques, targets measured and target locations are fully reported in the evaluation report published by AFSPPF and are not included in this report. These values were determined by using the "Interim MTF/AIM Program" technique.

It should be noted that the value shown for 1044-2 Fwd camera includes one reading of only 32 cycles/mm. The reading may be accurate, but does not represent the nominal level of system performance. In comparison, visual resolution targets recorded ten passes after this reading location indicated an effective ground resolution of approximately eight feet, which corresponds to an MTF reading on the order of 130 cycles/mm.

SECTION 5

PANORAMIC CAMERA EXPOSURE

The Master camera contained a 0.200 inch slit and a Wratten 23A filter. The Slave camera had a 0.150 inch slit and a Wratten 21 filter. These conditions placed the nominal exposure between the full and the intermediate processing curve.

The frequency distributions of the solar elevations and solar azimuths encountered during the photographic operations are shown in Figures 5-1 to 5-4.

The nominal exposure times of the Master and Slave cameras are shown as a function of latitude for passes D-25, D-70, and D-116 in Figures 5-5 to 5-10. Superimposed on these plots are relative distributions of camera operations for the portion of the mission represented by each plot. These distributions became very uniform with latitude as the mission progressed because of the extended operations programmed in order to reduce mission duration.

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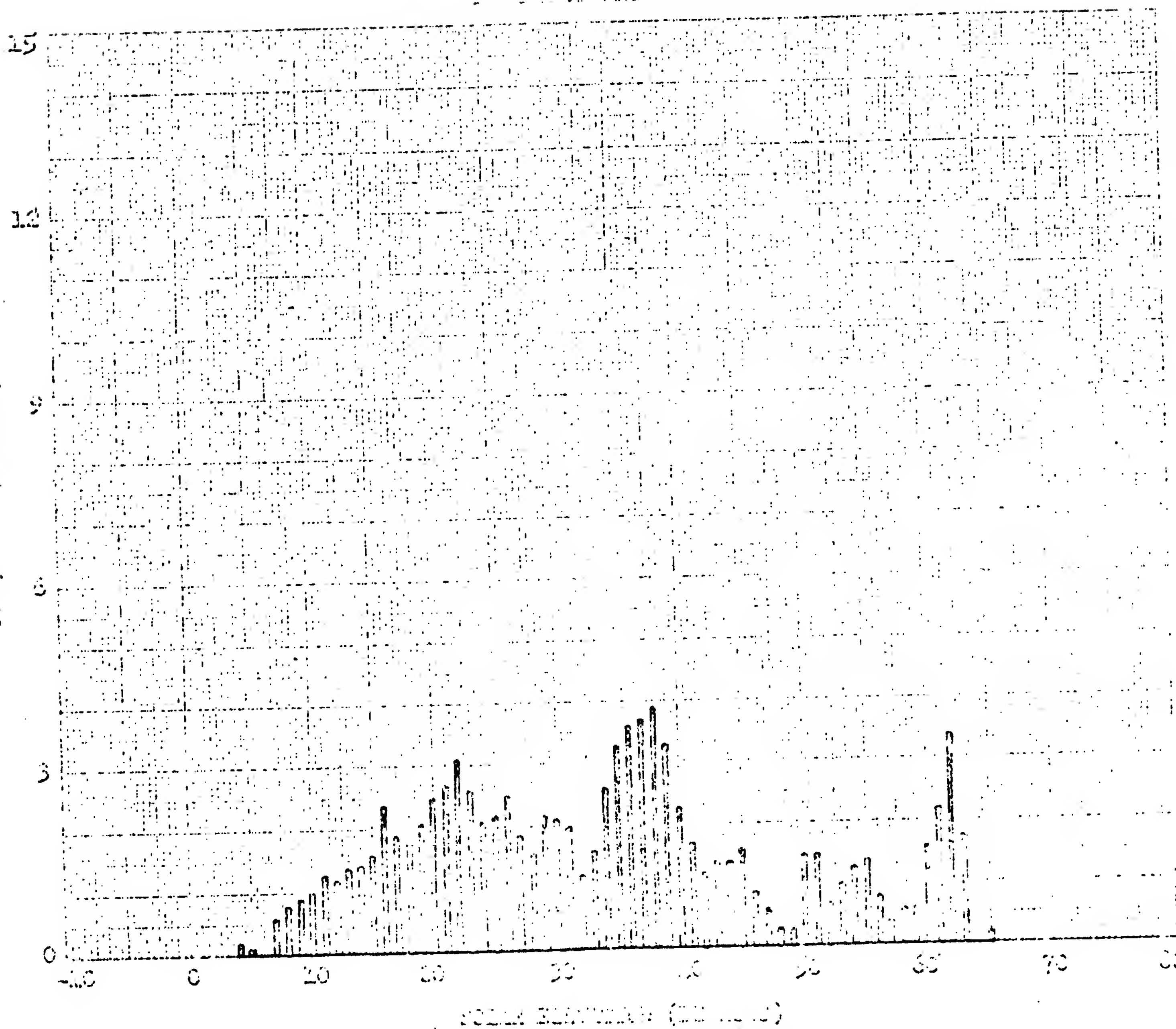

1044-1

J-41

202

11/2/67

2131 Z

81.5°

FIGURE 5-1

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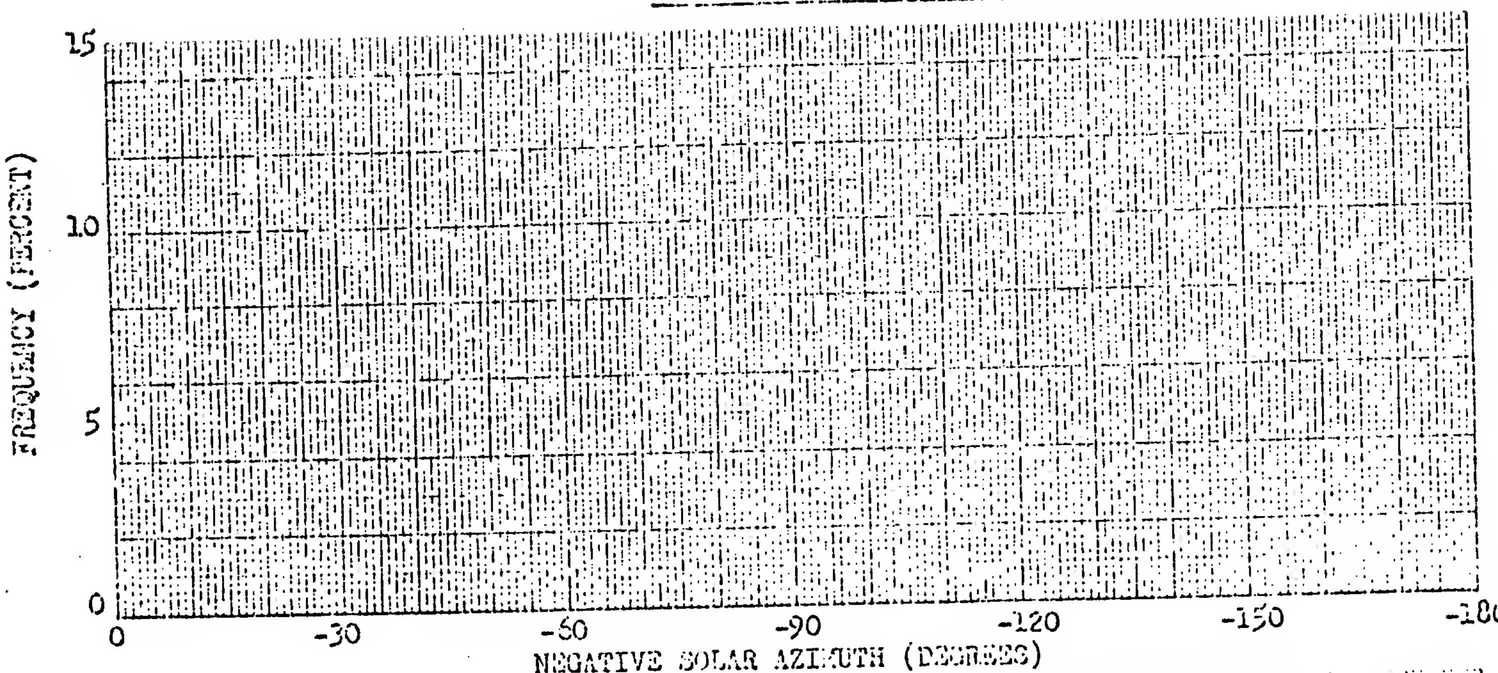
SOLAR AZIMUTH FREQUENCY DISTRIBUTION



Mission No: 1044-1

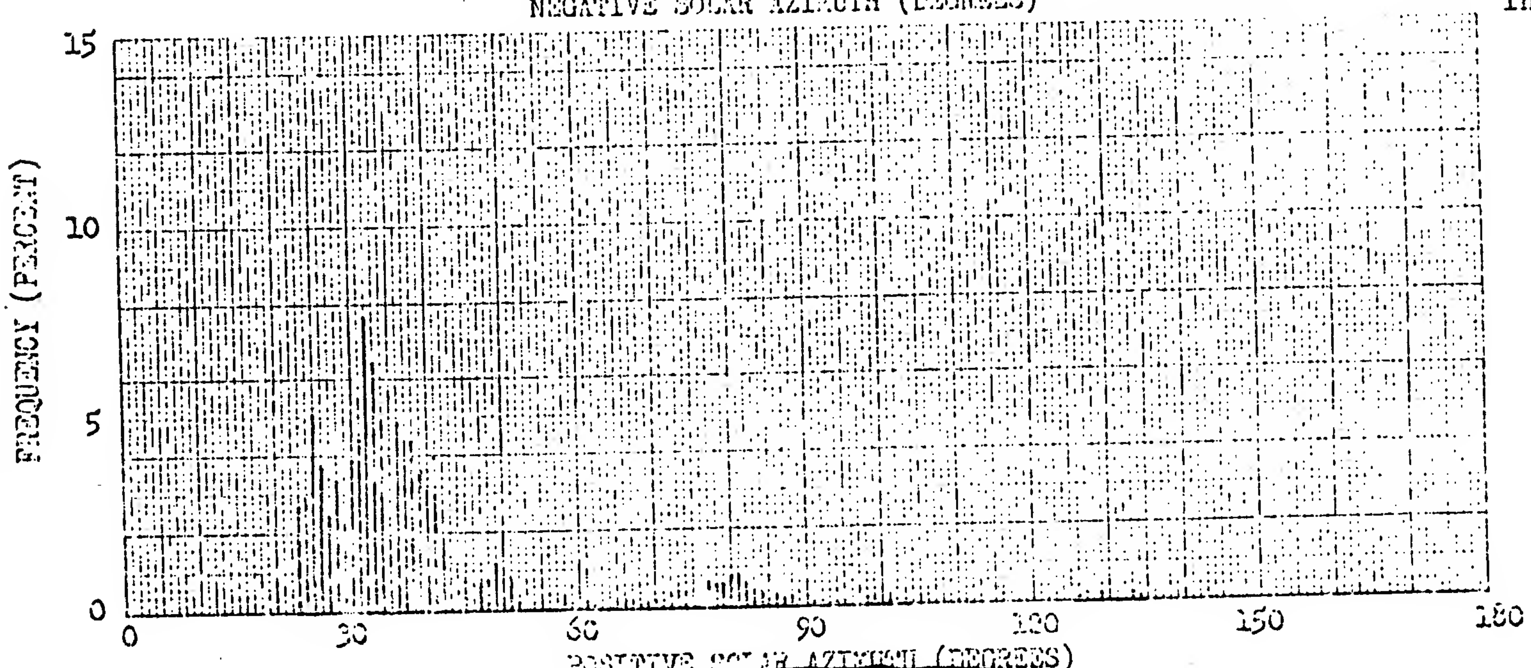
Payload No: J-41

Camera No: 202

Launch Date: 11/2/67

Launch Time: 2131 Z

Inclination: 81.5°



SIGN NOTATION

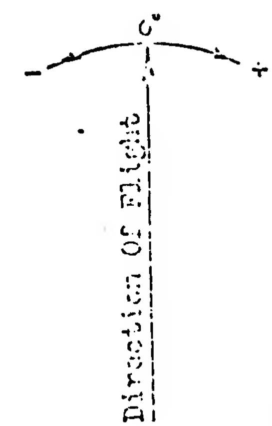


FIGURE 5-2

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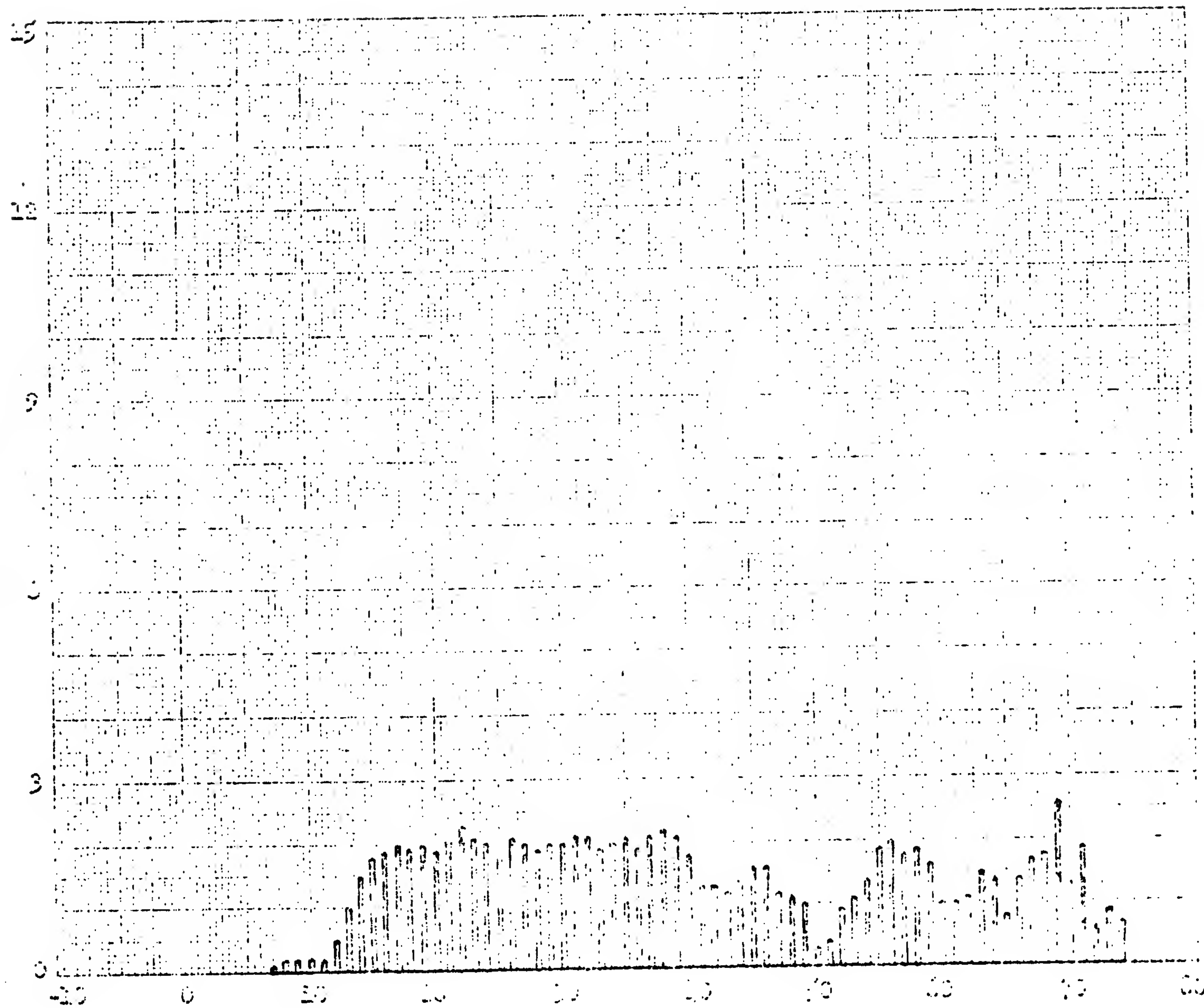

Mission No: 1044-2

Payload No: J-41

Camera No: 202

Launch Date: 11/2/67

Launch Time: 2131 Z

Inclination: 81.5°

FIGURE 5-3

34

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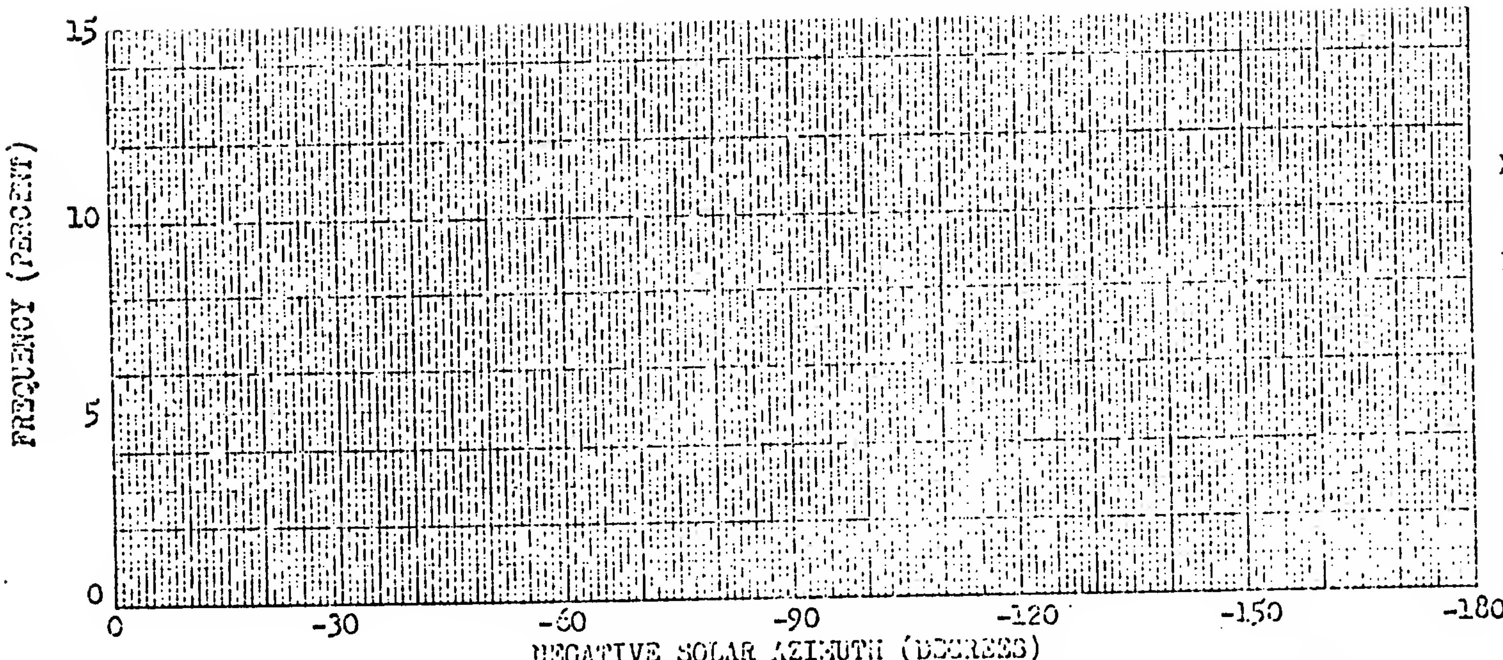
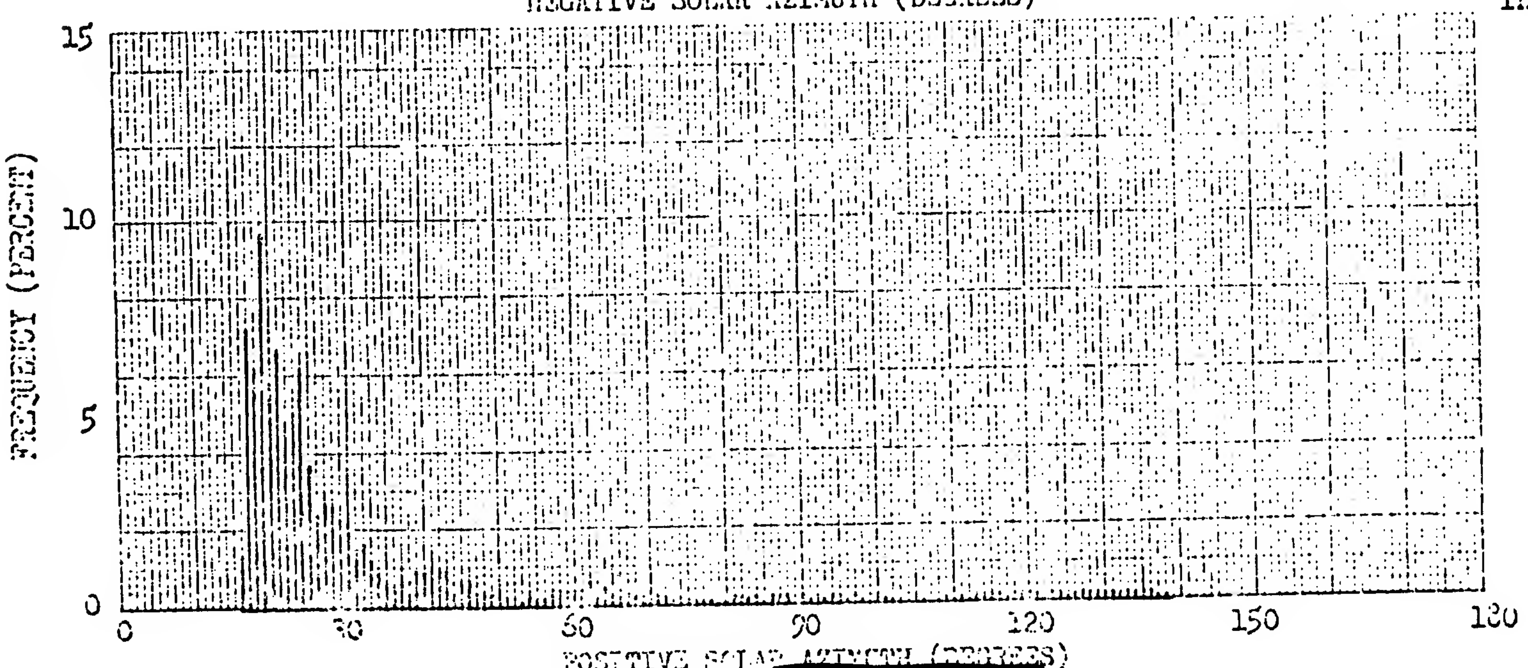
SOLAR AZIMUTH FREQUENCY DISTRIBUTION





Mission No: 1044-2

Payload No: J-41

Camera No: 202

Launch Date: 11/2/67

Launch Time: 2131 Z

Inclination: 81.5°

SIGN NOTATION

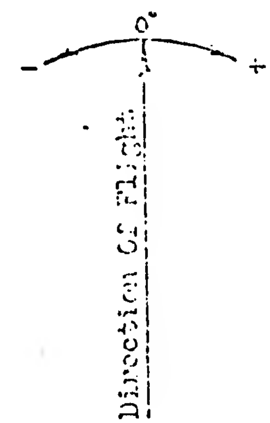


FIGURE 5-4

EXPOSURE POINTS

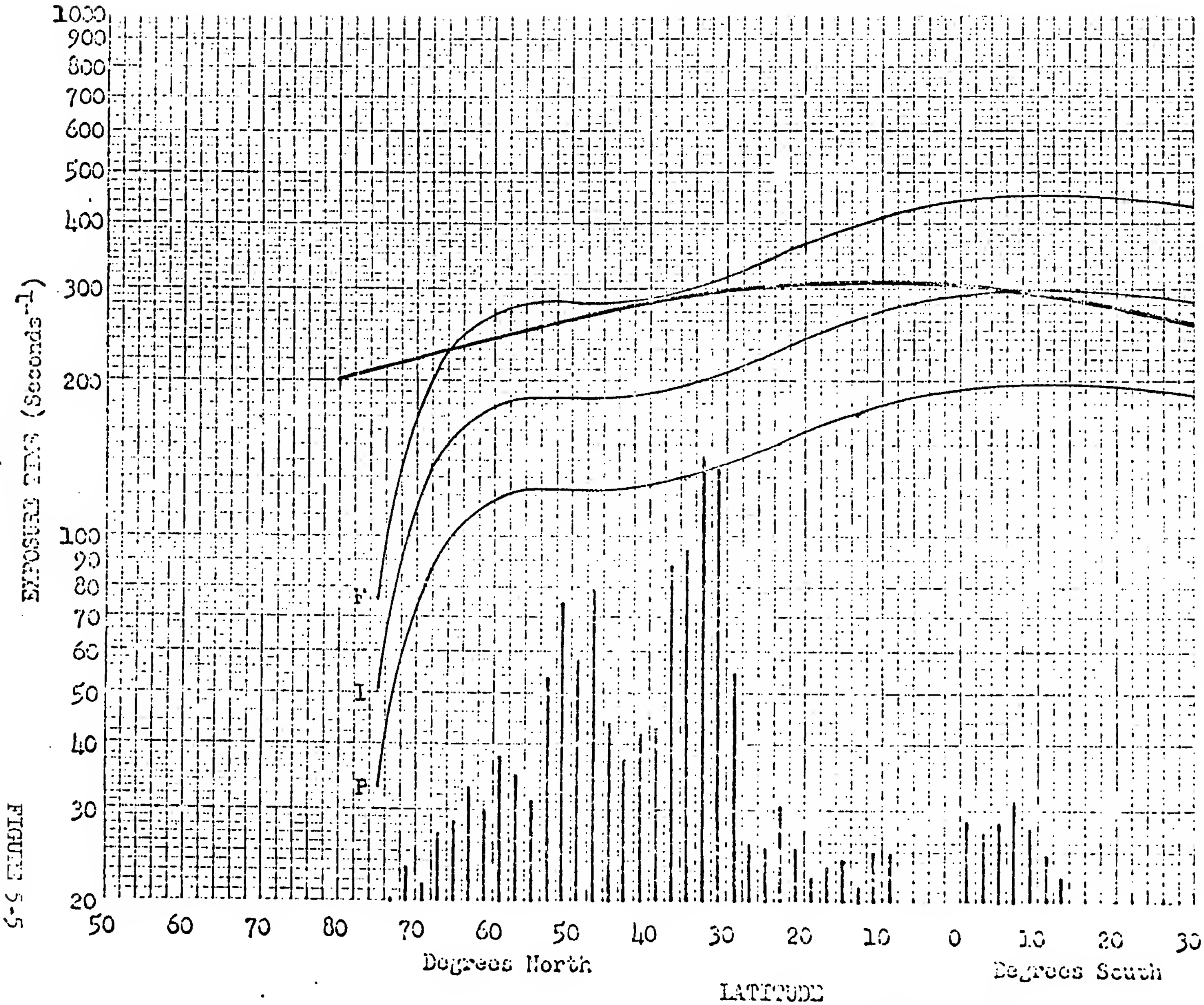


FIGURE 5-5

Mission No: 1044

Payload No: J-41

Camera No: 202

Pass No: 25

Launch Date: 11/2/67

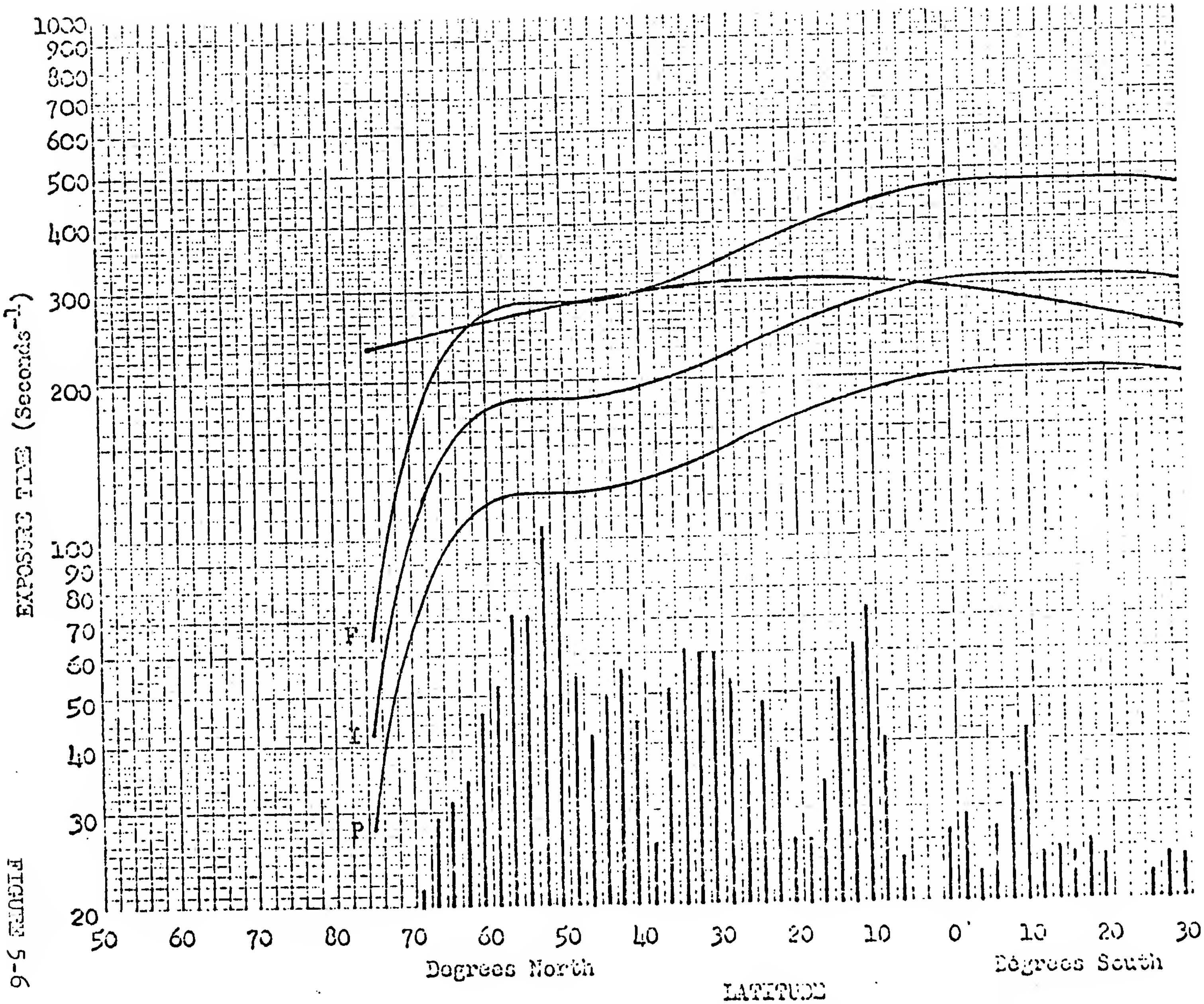
Launch Time: 2131 Z

Slit Width: .225

Filter Type: Wratten 23

Film Type: 3404

EXPOSURE POINTS



Mission No: 1044

Payload No: J-41

Camera No: 202

Pass No: 70

Launch Date: 11/2/67

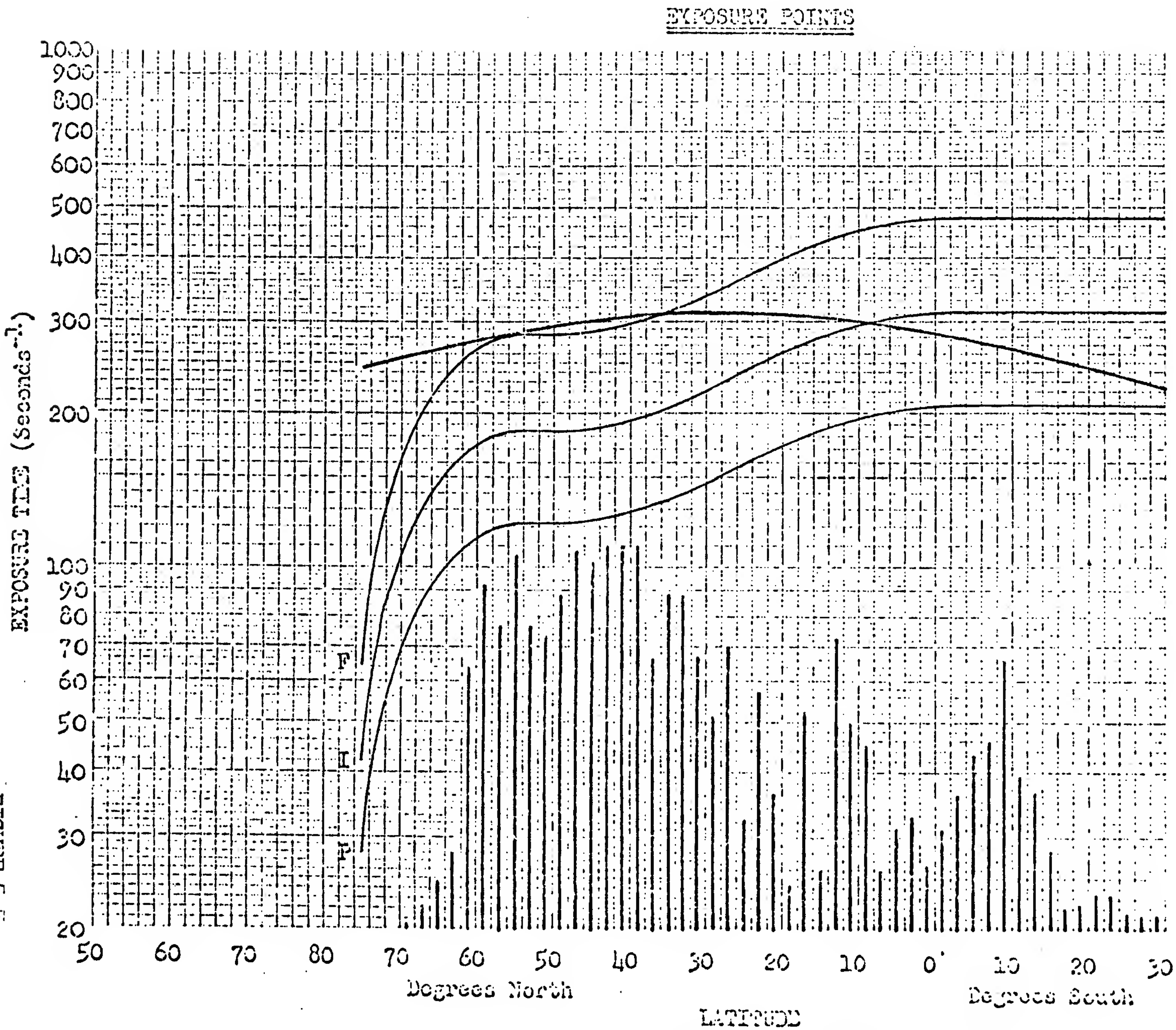
Launch Time: 2131 Z

Slit Width: .225

Filter Type: Wratten 23

Film Type: 3404

FIGURE 5-6



Mission No: 1044

Payload No: J-41

Camera No: 202

Pass No: 116

Launch Date: 11/2/67

Launch Time: 2131 Z

Slit Width: .225

Filter Type: Wratten 23

Film Type: 3404

FIGURE 5-7

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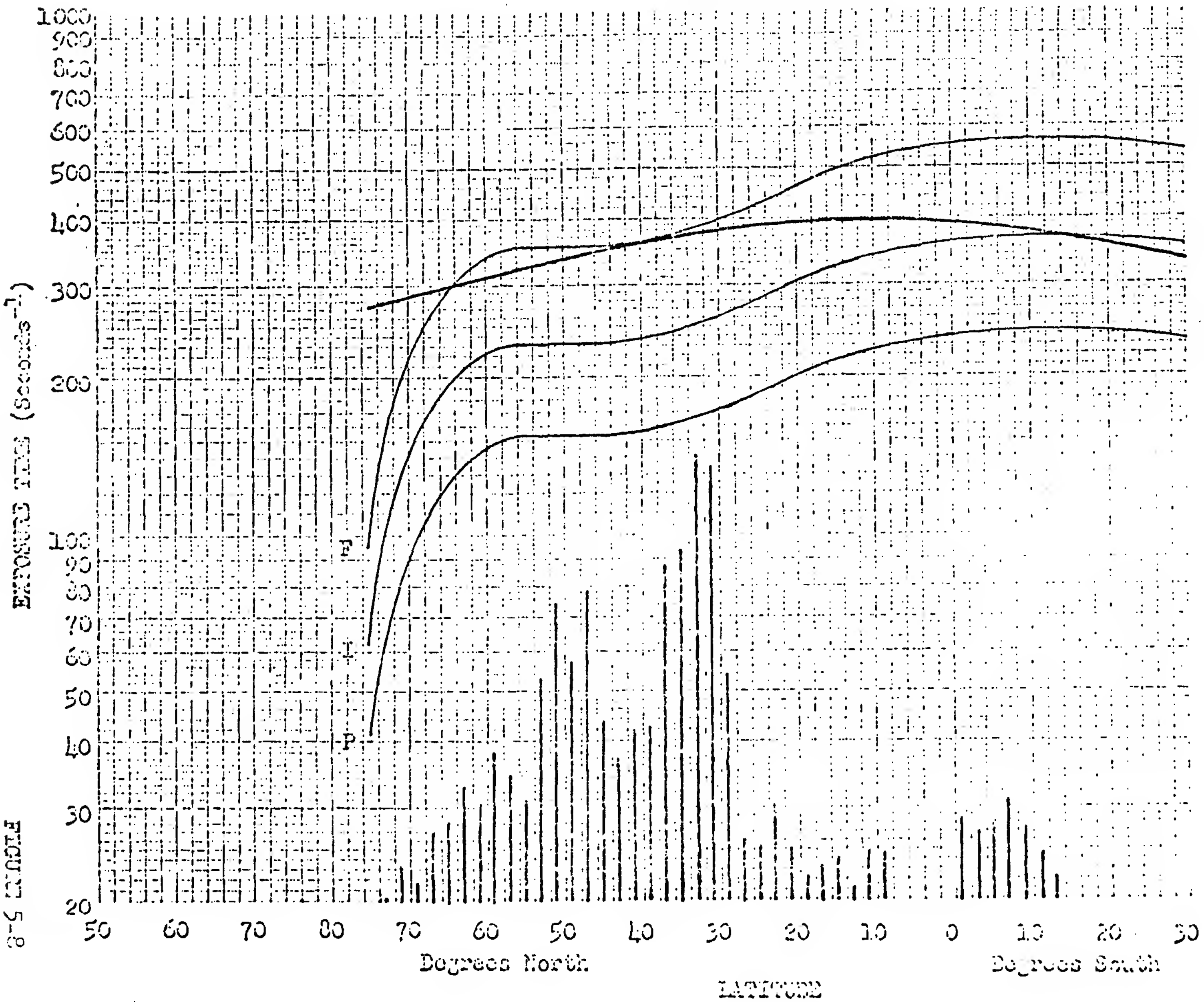
EXPOSURE POINTS



Mission No: 1044

Payload No: J-41

Camera No: 203

Pass No: 25

Launch Date: 11/2/67

Launch Time: 2131 Z

Slit Width: .175

Filter Type: Wratten 21

Film Type: 3404

FIGURE 5-8

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EXPOSURE POINTS

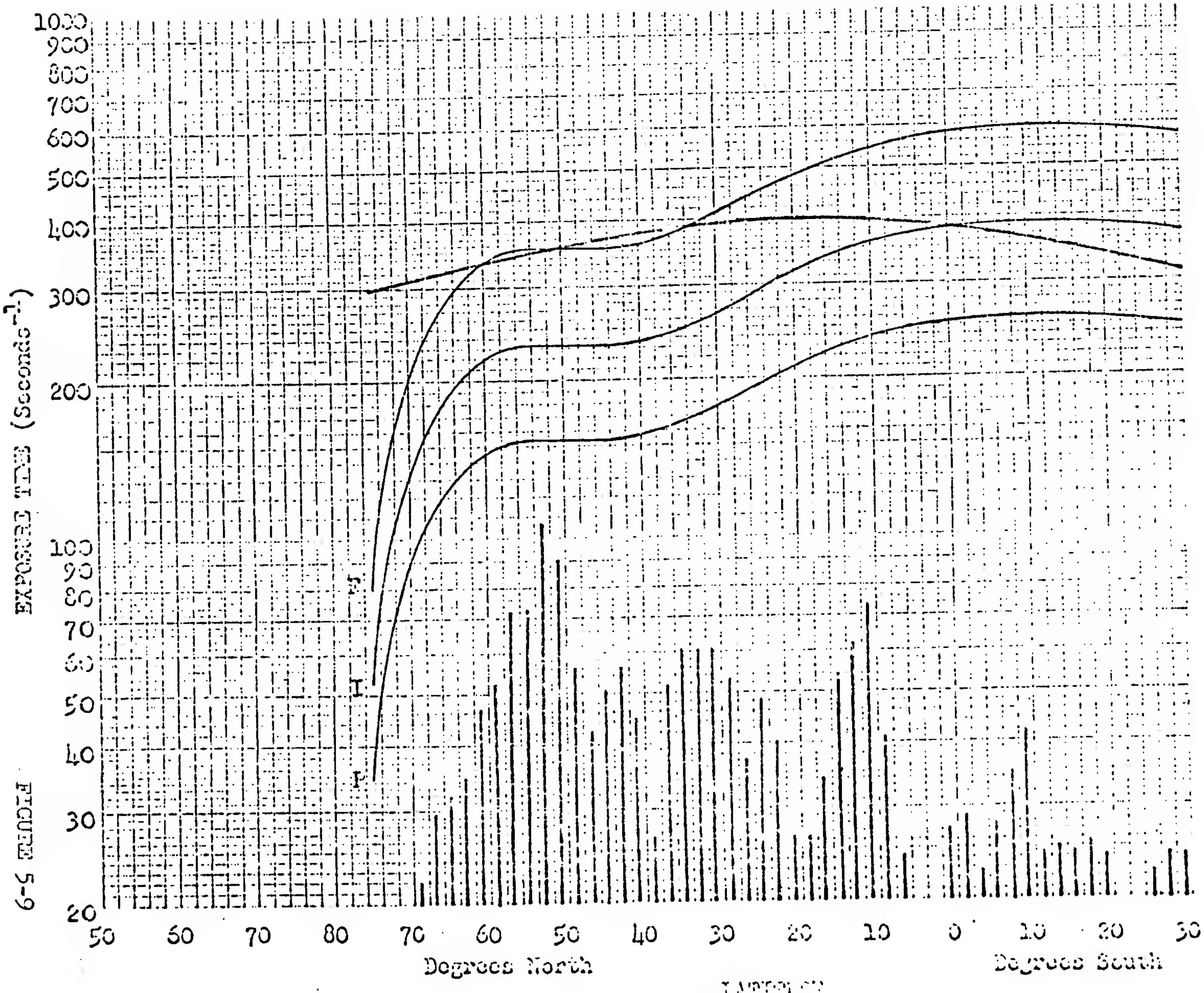

FIGURE 5-9

Mission No: 1044

Payload No: J-41

Camera No: 203

Pass No: 70

Launch Date: 11/2/67

Launch Time: 2131 Z

Slit Width: .175

Filter Type: Wratten 21

Film Type: 3404

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EXPOSURE POINTS

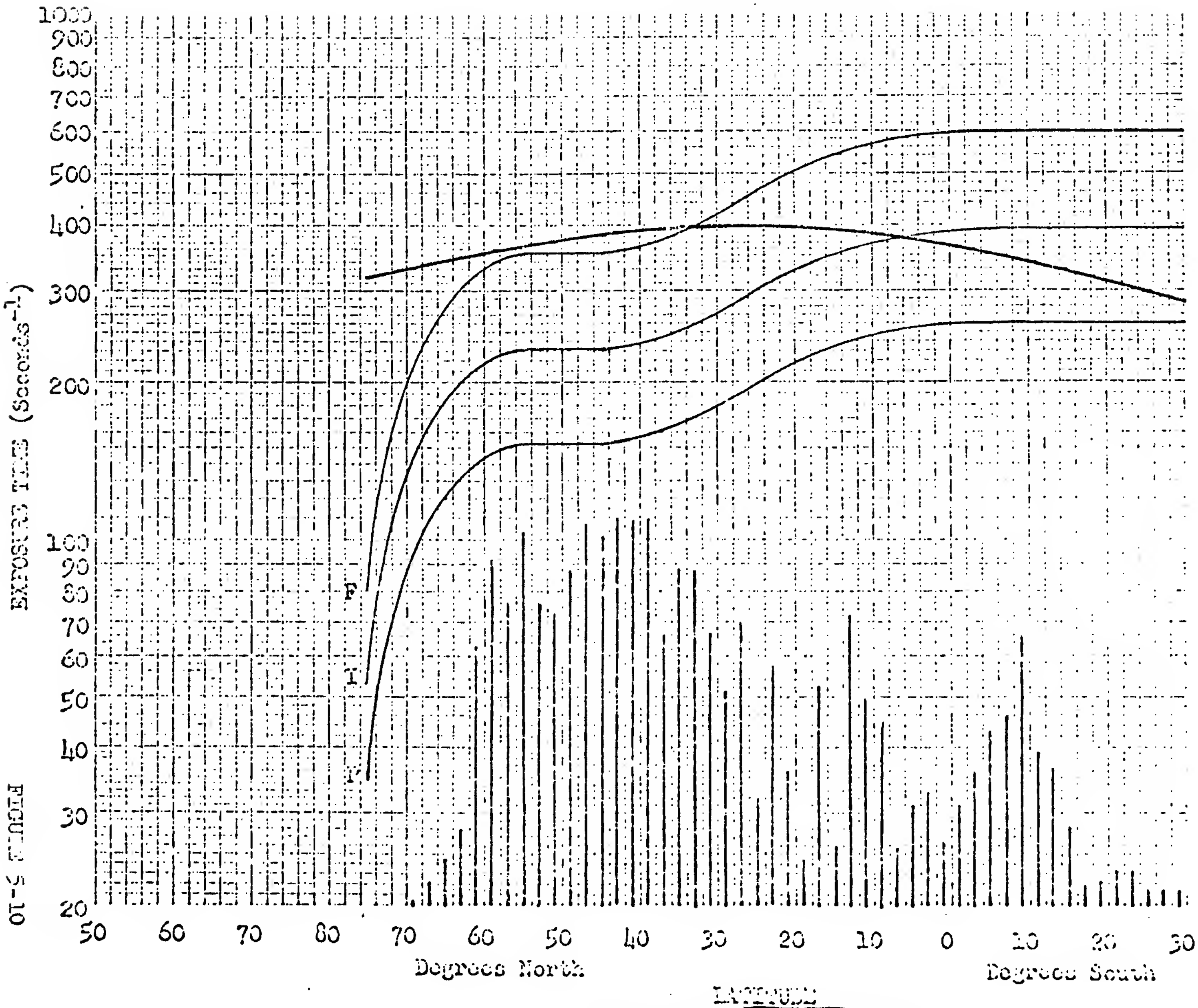

FIGURE 5-10

Mission No: 1044

Payload No: J-41

Camera No: 203

Pass No: 116

Launch Date: 11/2/67

Launch Time: 2131 Z

Slit Width: .175

Filter Type: Wratten 21

Film Type: 3404

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SECTION 6

DIFFUSE DENSITY MEASUREMENTS

The diffuse density measurements made by AFSPPF were computer sorted at A/P to permit analysis of the density ranges resulting from the three levels of conventional processing and from the dual gamma process experiment. The sorting technique utilizes the base plus fog density values for the conventionally processed materials where measurements up to 0.09 density are considered as having received Primary processing, 0.10 to 0.17 as Intermediate, and above 0.17 density as Full. The percentage of this material that was processed at each level, based on the computer sort, is tabulated below with the predicted and reported processing percentages.

Mission	Camera		Primary	Intermediate	Full	Transition
1044-1	Fwd	Predicted	0	13	87	-
		Reported	0	6	88	6
		Computed	0	8	92	-
1044-1	Aft	Predicted	0	19	81	-
		Reported	2	12	71	15
		Computed	0	23	77	-
1044-2	Fwd	Predicted	4	16	80	-
		Reported	0	4	92	4
		Computed	0	7	93	-
1044-2	Aft	Predicted	8	24	68	-
		Reported	5	17	63	15
		Computed	0	28	72	-

Approximately 30 percent of the total mission original negative was subjected to a "dual-gamma" processing experiment. The results indicate a very effective reduction in the maximum cloud and snow densities with only minor influence in the normal range of terrain densities.

Graphical computer plots of the sampled density distributions are presented in Appendix A, Pages A-1 through A-48. Note the variation between the conventional processing plots and those for the dual gamma process. The differences in the cloud Dmax are very distinct. There is, however, a more subtle distinction that should be emphasized; namely, the incidence of lower terrain Dmin densities with the dual gamma process than with conventional processing. The reasons for these variations are obvious upon comparison of the corresponding sensitometric curves, Figures 6-2 through 6-13.

The sensitometric curves also illustrate the distinct deviations of the actual flight material processing from the standards and from the R-2 day samples. Obviously, there is need to maintain exposure control based on actual effective processed film speeds rather than on the standards. This will be especially true for the dual gamma process if future deviations continue to be as significant as was experienced in this case. As the dual gamma process becomes operational, it is anticipated that reliable processing controls will be attained. Likewise, it is anticipated that as additional progress in target density analysis is made a corresponding reliable exposure criteria will become a reality.

A summary of the processing and exposure analysis for the conventionally processed material is shown in Table 6-1. The terrain D-Min criteria, (range) for proper exposure and processing is 0.40 to 0.90 density units. The area measured for D-Min is selected subjectively and is not necessarily the absolute D-Min in the photography.

The terrain D-Min criteria has been found to be an inadequate indicator of optimum target exposure. Maximum intelligence is derived from specific target densities meeting this criteria; which, in general, results in overall terrain D-Min values repeatedly below the 0.40 density level. It is therefore apparent that the more desirable missions will, most likely, be reported as significantly underexposed by the present terrain D-Min criteria.

A density range chart, Figure 6-1, is included in this report. This type of chart for Missions 1004 to 1031 is included in the A/P final report for Mission 1031.

These charts are produced from the same density measurements previously mentioned in this section. The computer produced the mean, median and range figures for the various processing levels used. The chart includes the number of frames (samples) in which the density measurements were made. These measurements are made on approximately every tenth frame throughout the mission. It should be noted that the density figures shown for Missions 1044-1 and 1044-2 include both dual-gamma and conventionally processed materials, thus tending to artificially enlarge the apparent range of densities, especially for the cloud D-Max values.

MISSION 1044-1 INSTR - FWD 1/16/69 PROCESSING AND EXPOSURE ANALYSIS

PROCESS LEVEL	SAMPLE SIZE	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP&PROC	OVER PROCESSED	OVER EXPOSED
PRIMARY	0	0 PC	0 PC	0 PC	7 PC	7 PC
INTERMEDIATE	13	0 PC	0 PC	46 PC	46 PC	8 PC
FULL	147	35 PC	0 PC	54 PC	10 PC	1 PC
ALL LEVELS	160	32 PC	0 PC	53 PC	13 PC	1 PC

MISSION 1044-1 INSTR - AFT 1/16/69 PROCESSING AND EXPOSURE ANALYSIS

PROCESS LEVEL	SAMPLE SIZE	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP&PROC	OVER PROCESSED	OVER EXPOSED
PRIMARY	0	0 PC	0 PC	0 PC	19 PC	19 PC
INTERMEDIATE	37	0 PC	11 PC	65 PC	19 PC	5 PC
FULL	126	28 PC	0 PC	65 PC	7 PC	0 PC
ALL LEVELS	163	21 PC	2 PC	65 PC	10 PC	1 PC

MISSION 1044-2 INSTR - FWD 1/16/69 PROCESSING AND EXPOSURE ANALYSIS

PROCESS LEVEL	SAMPLE SIZE	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP&PROC	OVER PROCESSED	OVER EXPOSED
PRIMARY	0	0 PC	0 PC	0 PC	7 PC	7 PC
INTERMEDIATE	12	0 PC	0 PC	42 PC	58 PC	0 PC
FULL	168	38 PC	0 PC	58 PC	4 PC	0 PC
ALL LEVELS	180	36 PC	0 PC	57 PC	7 PC	0 PC

MISSION 1044-2 INSTR - AFT 1/16/69 PROCESSING AND EXPOSURE ANALYSIS

PROCESS LEVEL	SAMPLE SIZE	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP&PROC	OVER PROCESSED	OVER EXPOSED
PRIMARY	0	0 PC	0 PC	0 PC	24 PC	24 PC
INTERMEDIATE	46	0 PC	25 PC	59 PC	15 PC	0 PC
FULL	116	31 PC	0 PC	66 PC	3 PC	0 PC
ALL LEVELS	162	22 PC	7 PC	64 PC	6 PC	0 PC

PROCESS LEVEL	BASE & FOG	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP&PROC	OVER PROCESSED	OVER EXPOSED
PRIMARY	0.01-0.09	0.01-0.13	0.14-0.39	0.40-0.90	---------	0.91 AND UP
INTERMED	0.10-0.17	0.01-0.20	0.21-0.39	0.40-0.90	0.91-1.34	1.35 AND UP
FULL	0.18 AND UP	0.01-0.39	---------	0.40-0.90	0.91-1.69	1.70 AND UP

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TABLE 6-1

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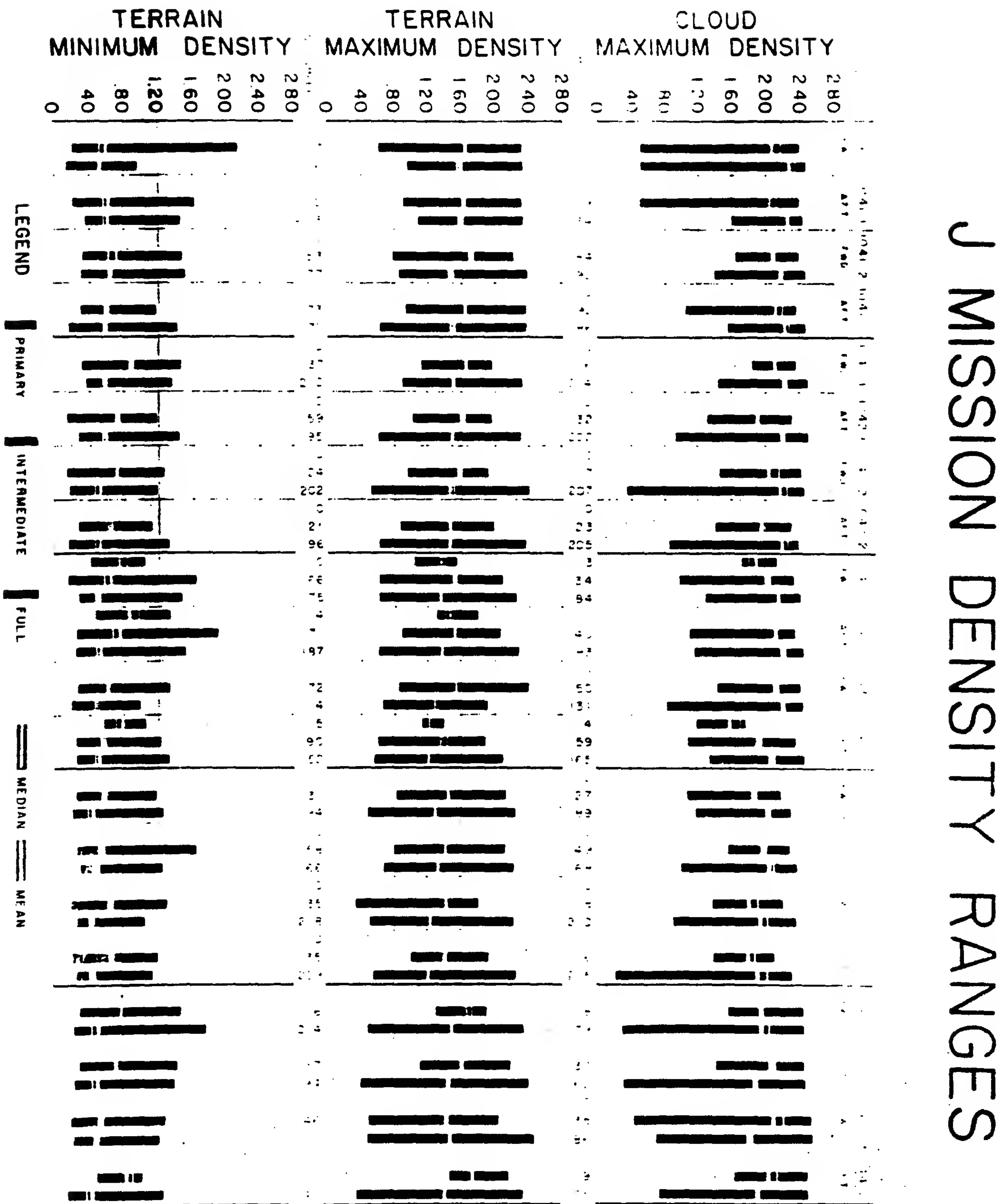

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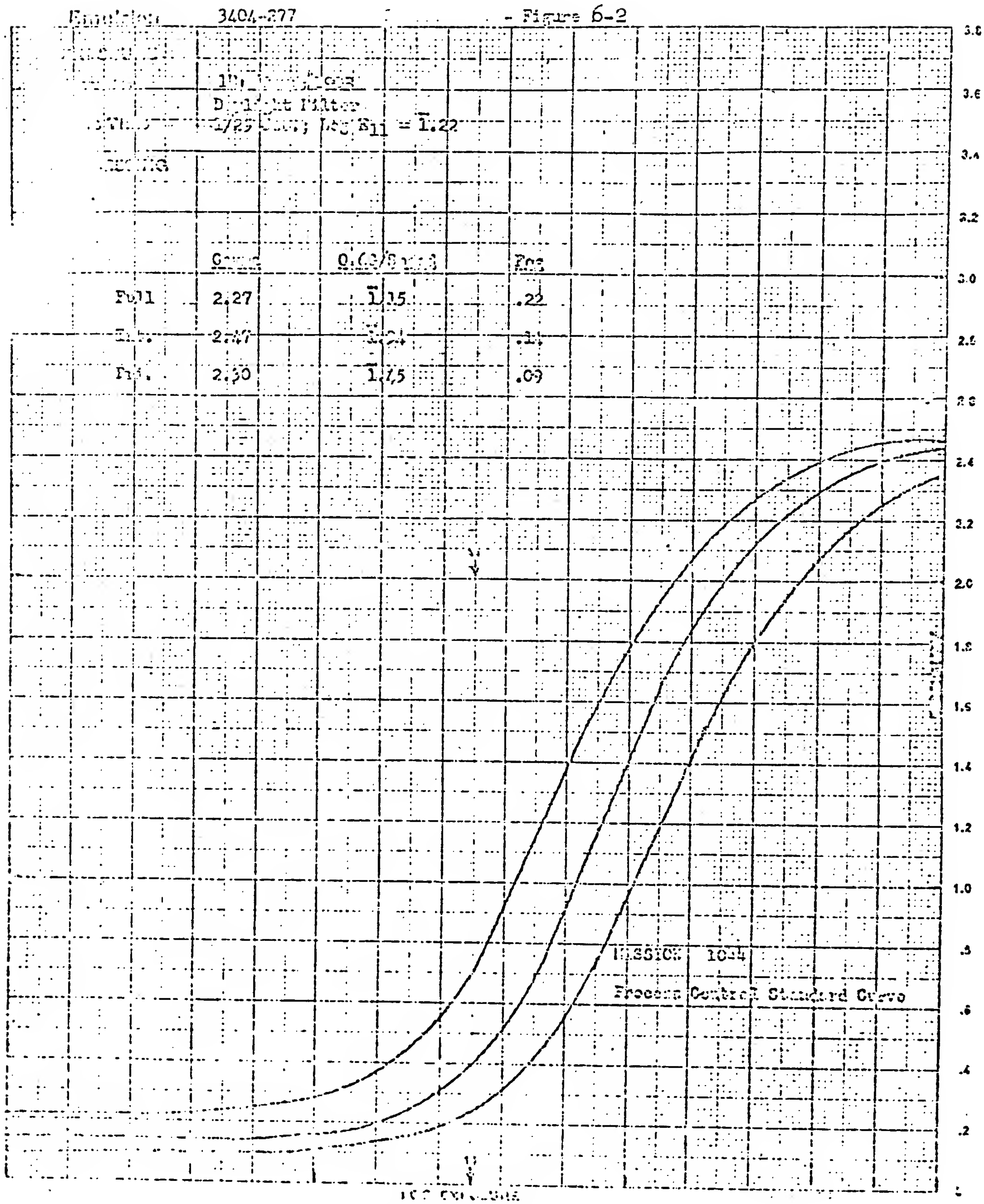

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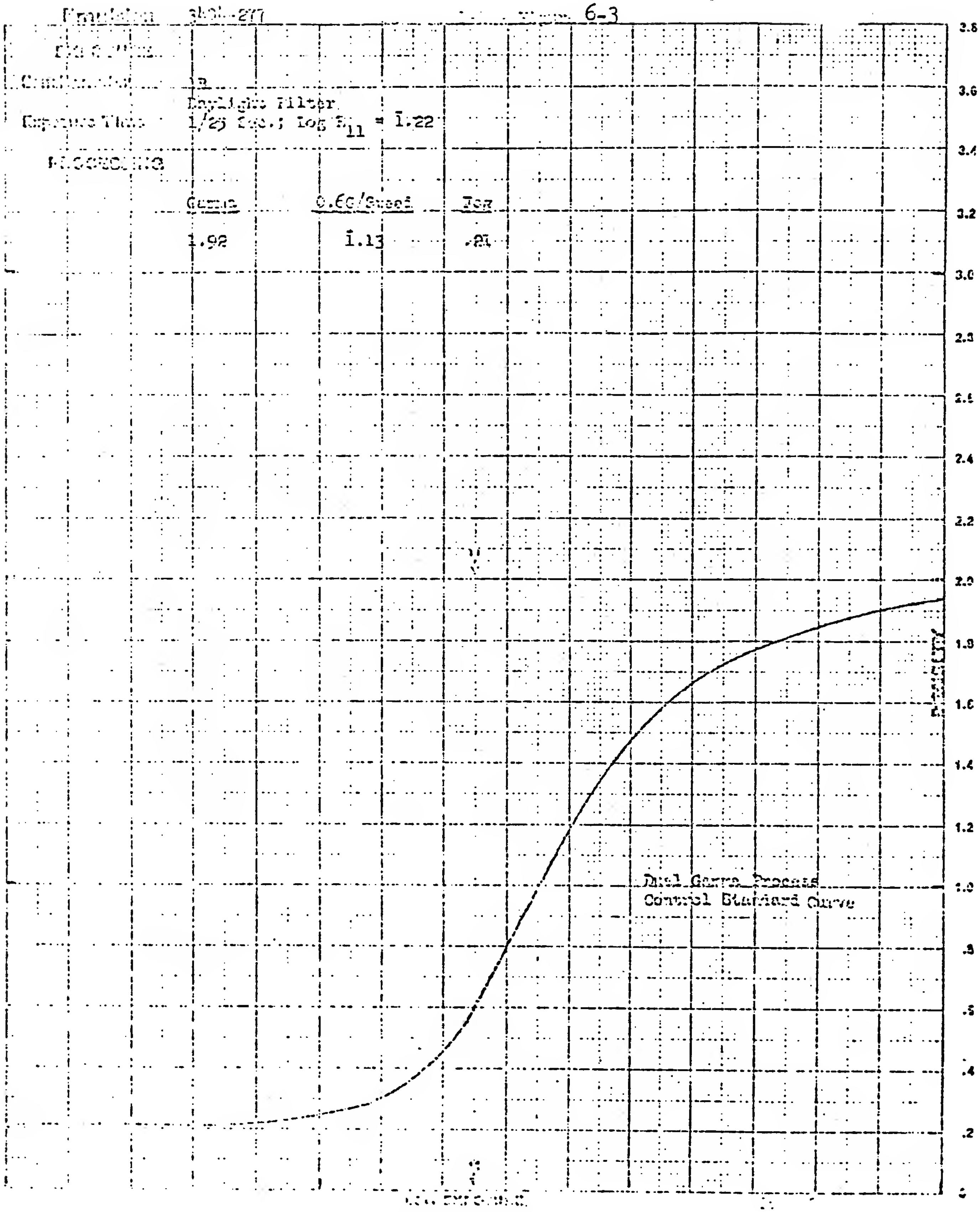
6-3



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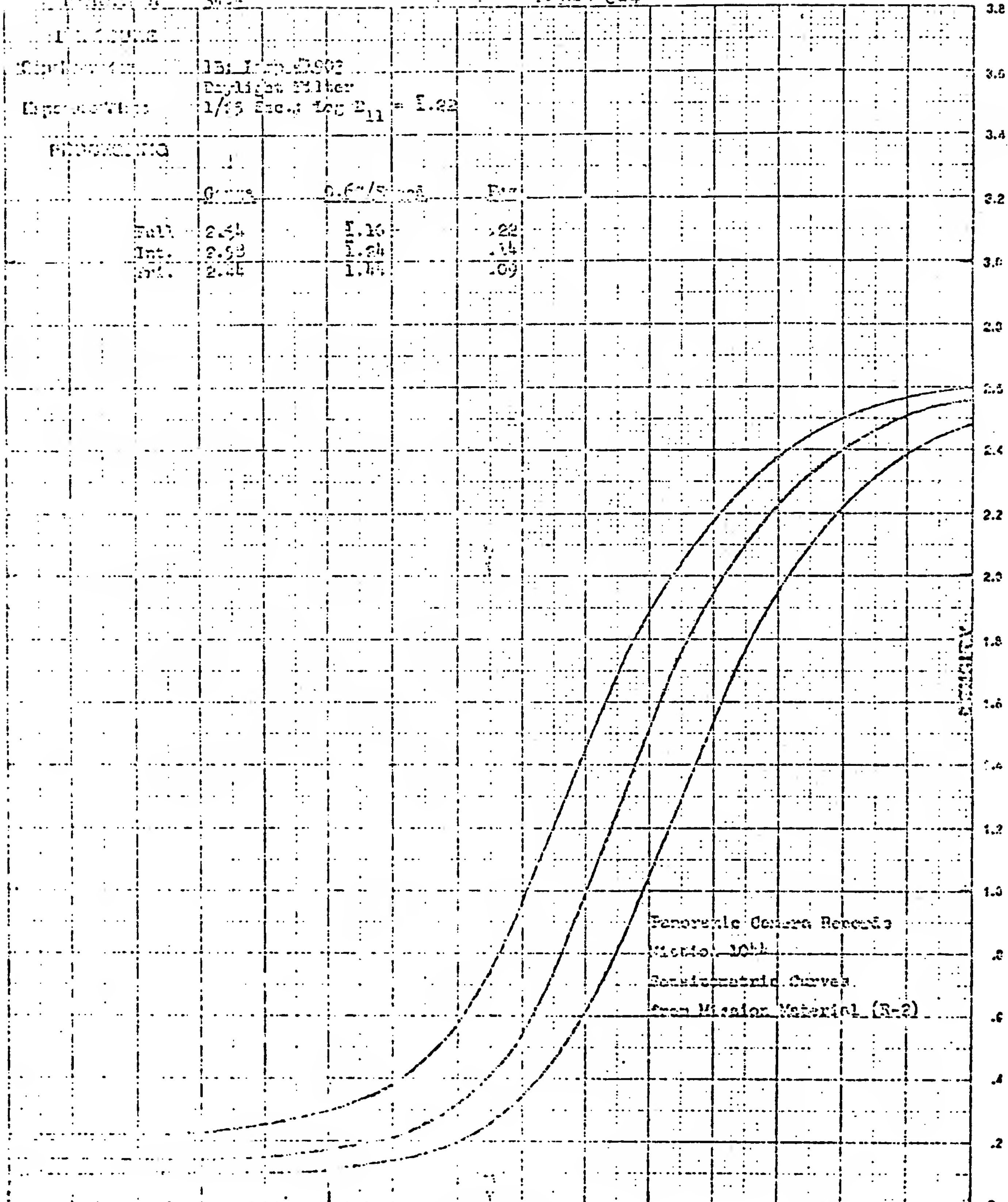
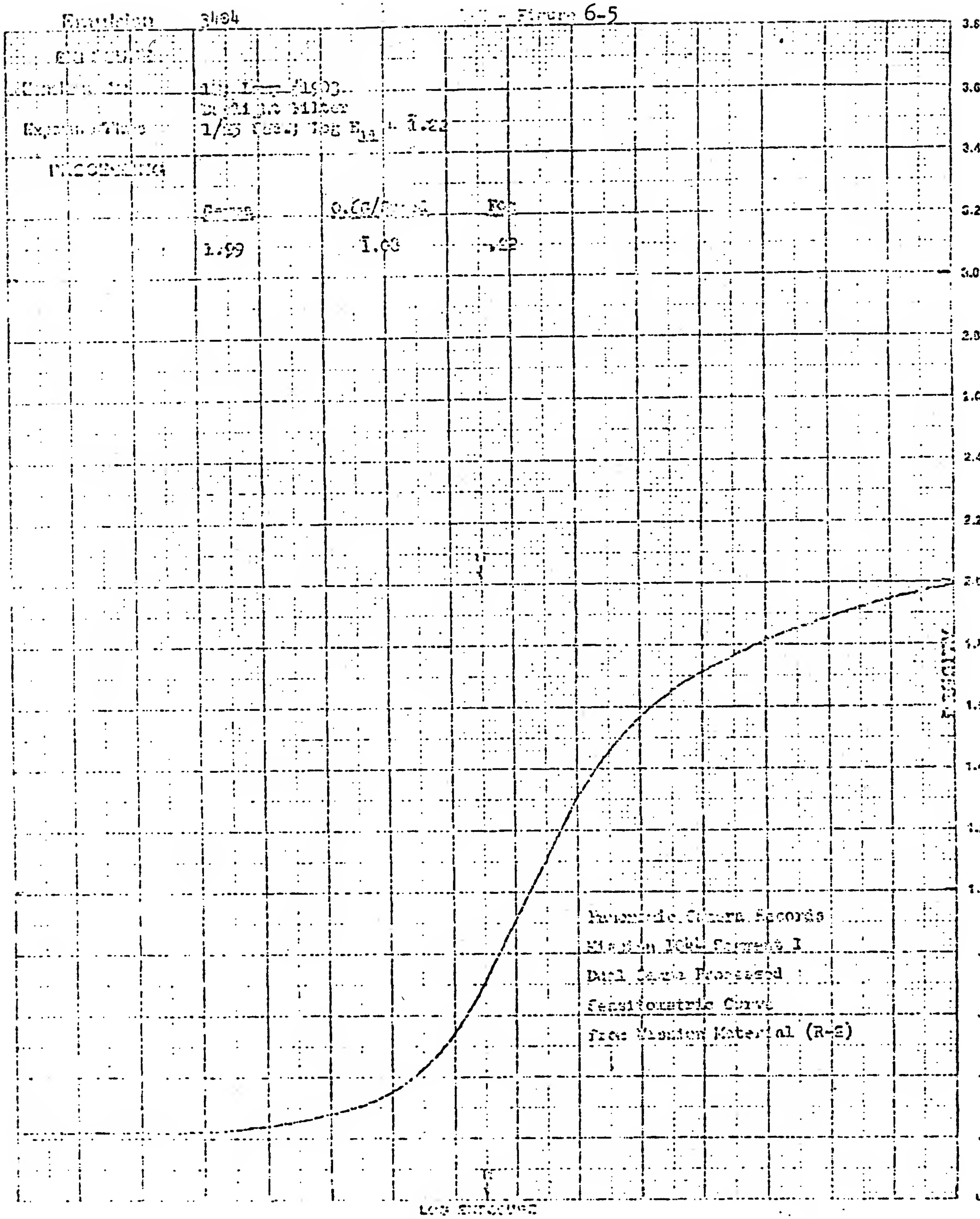


Figure 6-4

[redacted]

C [redacted]

[redacted]

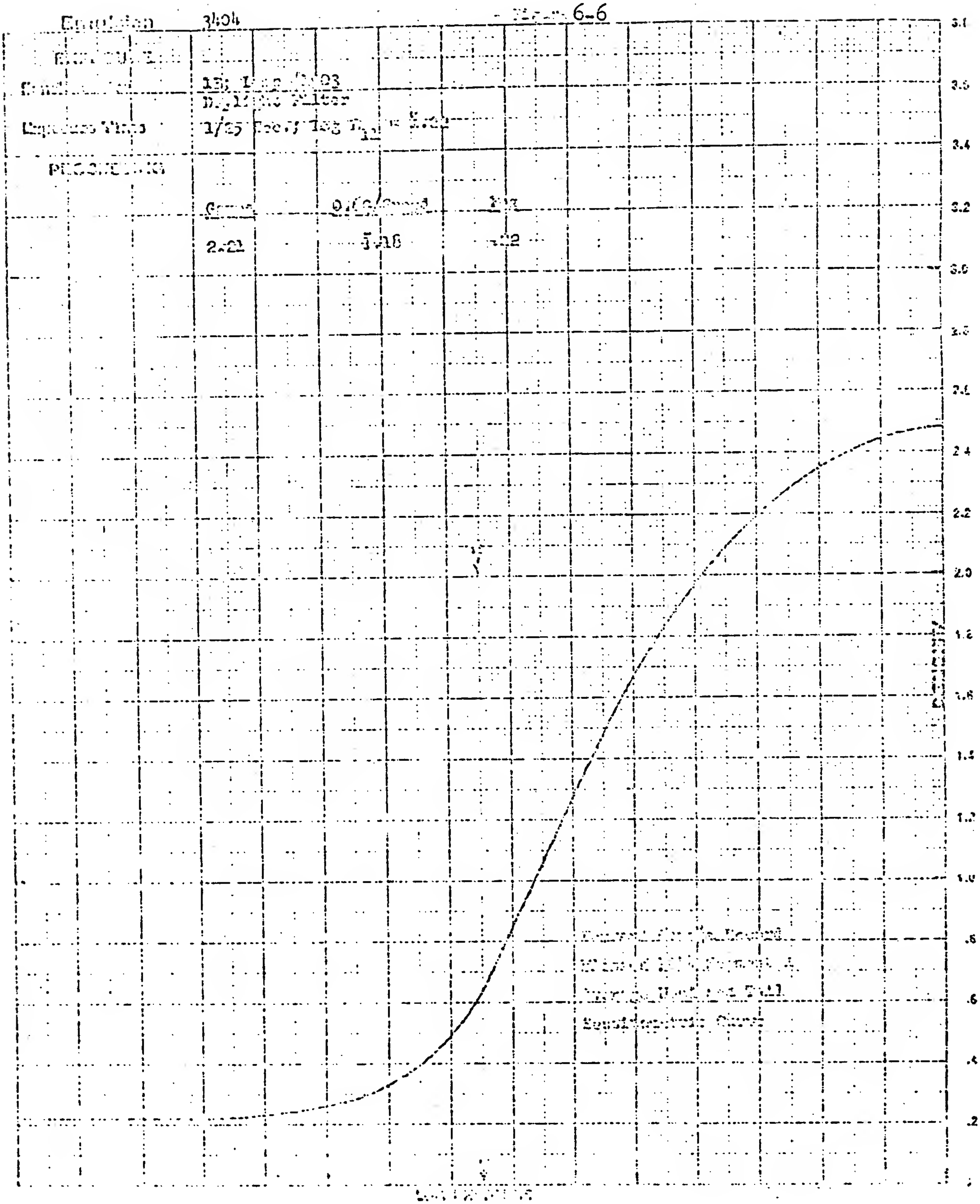


[redacted]

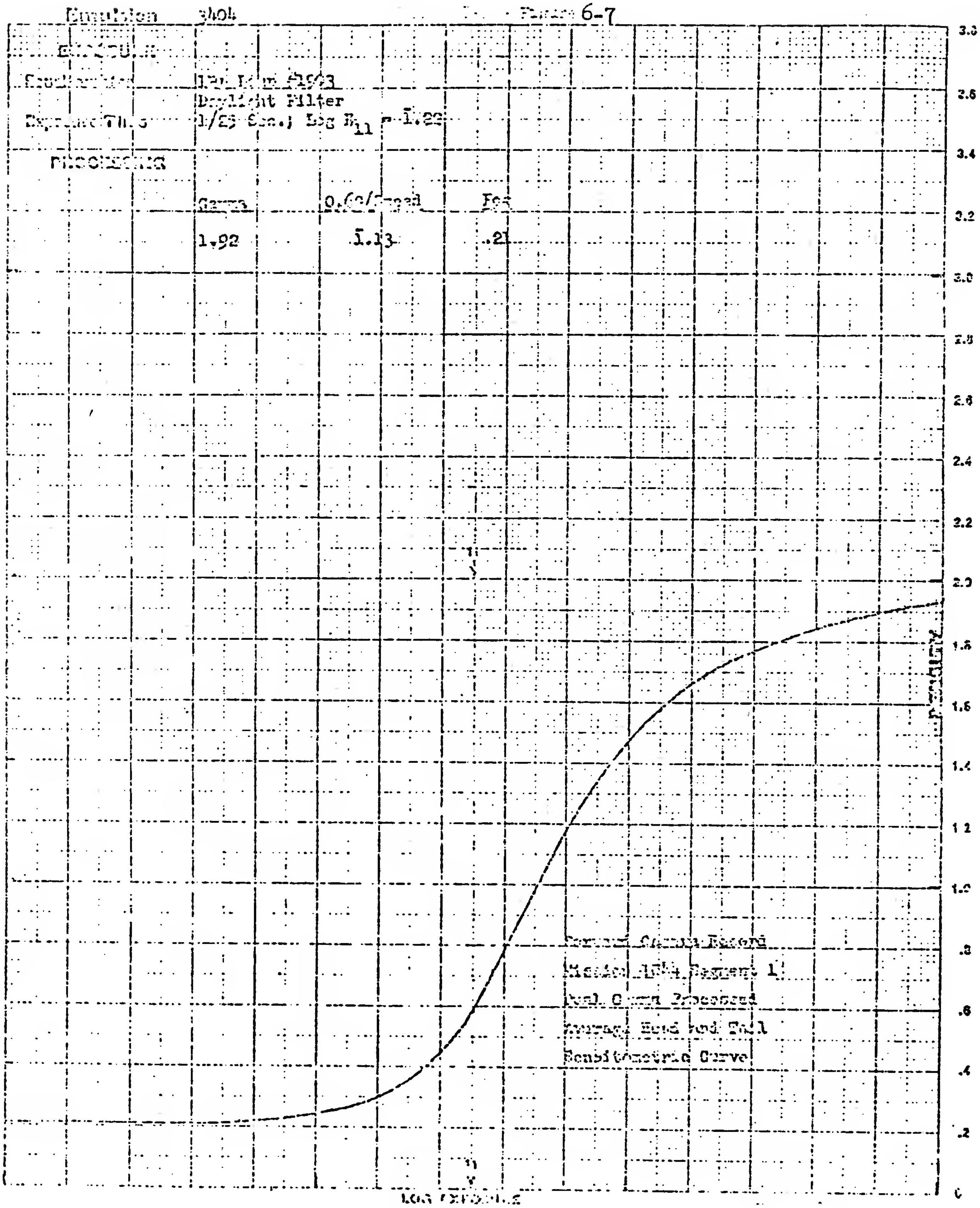
C[redacted]

~~TOP SECRET~~

[redacted]



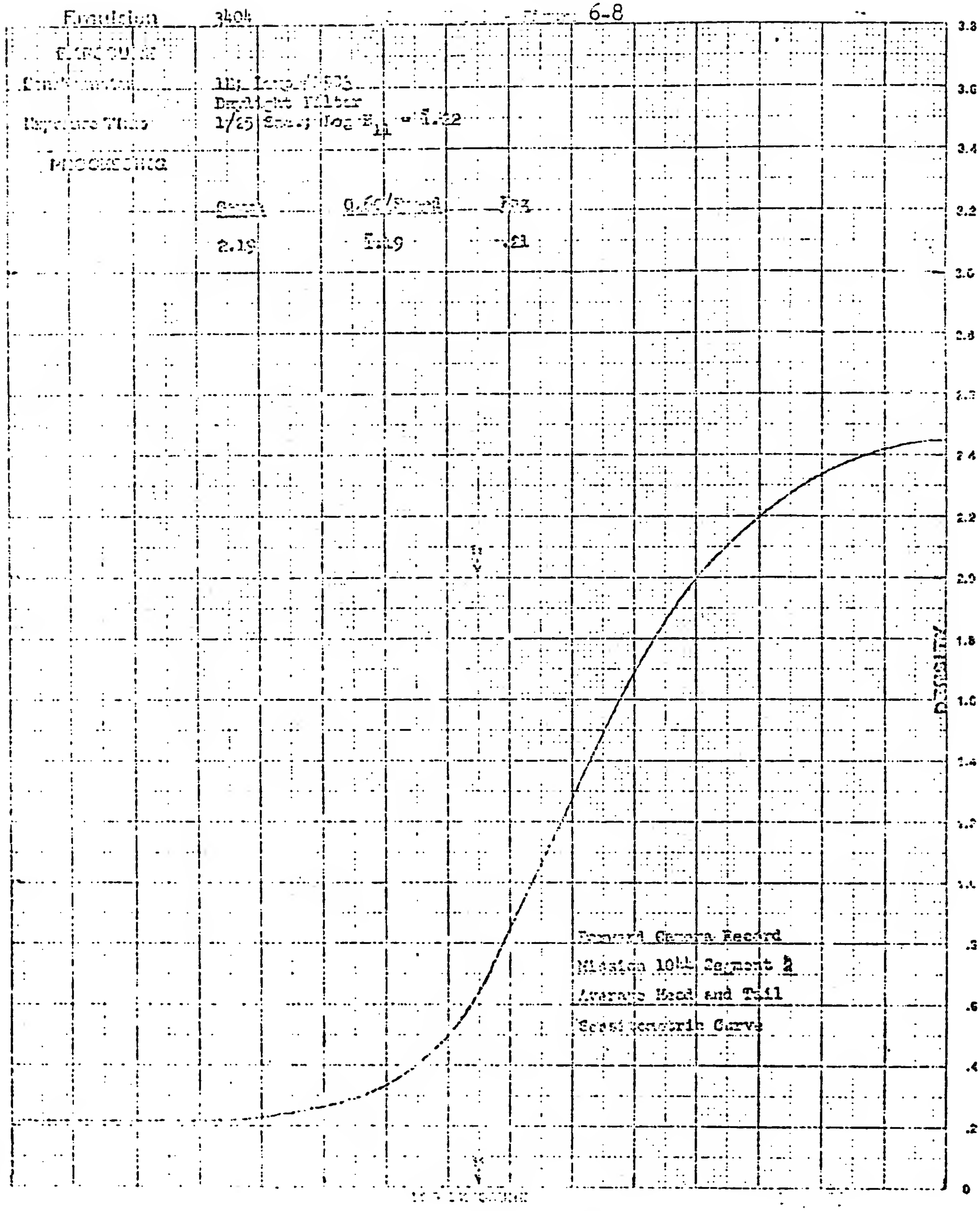
[redacted]


Emulsion 3404
6-7
Daylight Filter
Gamma
1.92
$\bar{1}$.13
.21
Sensitometric Curve
3.0
2.4
2.2
2.0
1.6
1.4
1.0
.8
.6
.4
.2
0

C/[redacted]

~~TOP SECRET~~

[redacted]

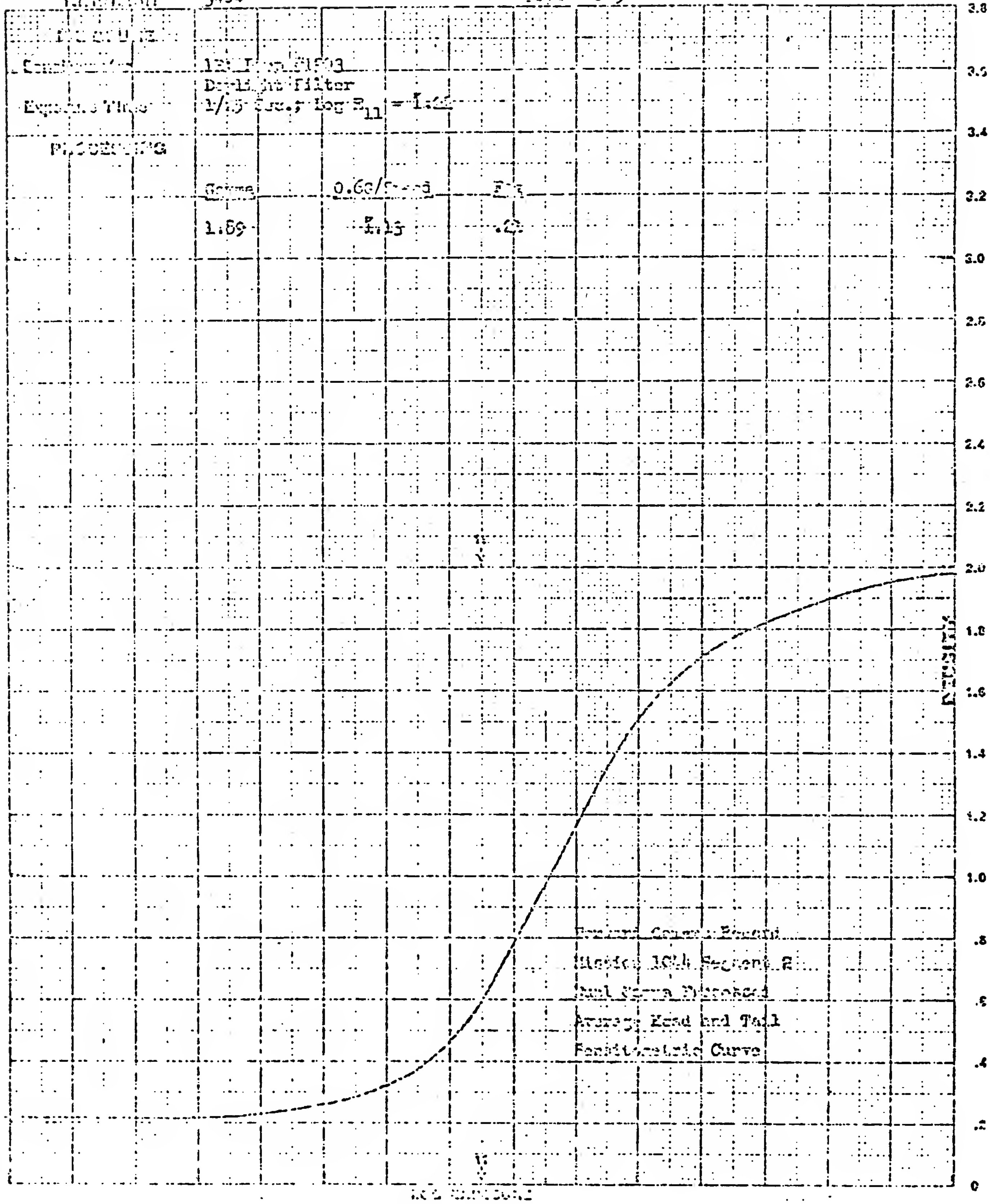


[redacted]

[redacted]

[redacted]

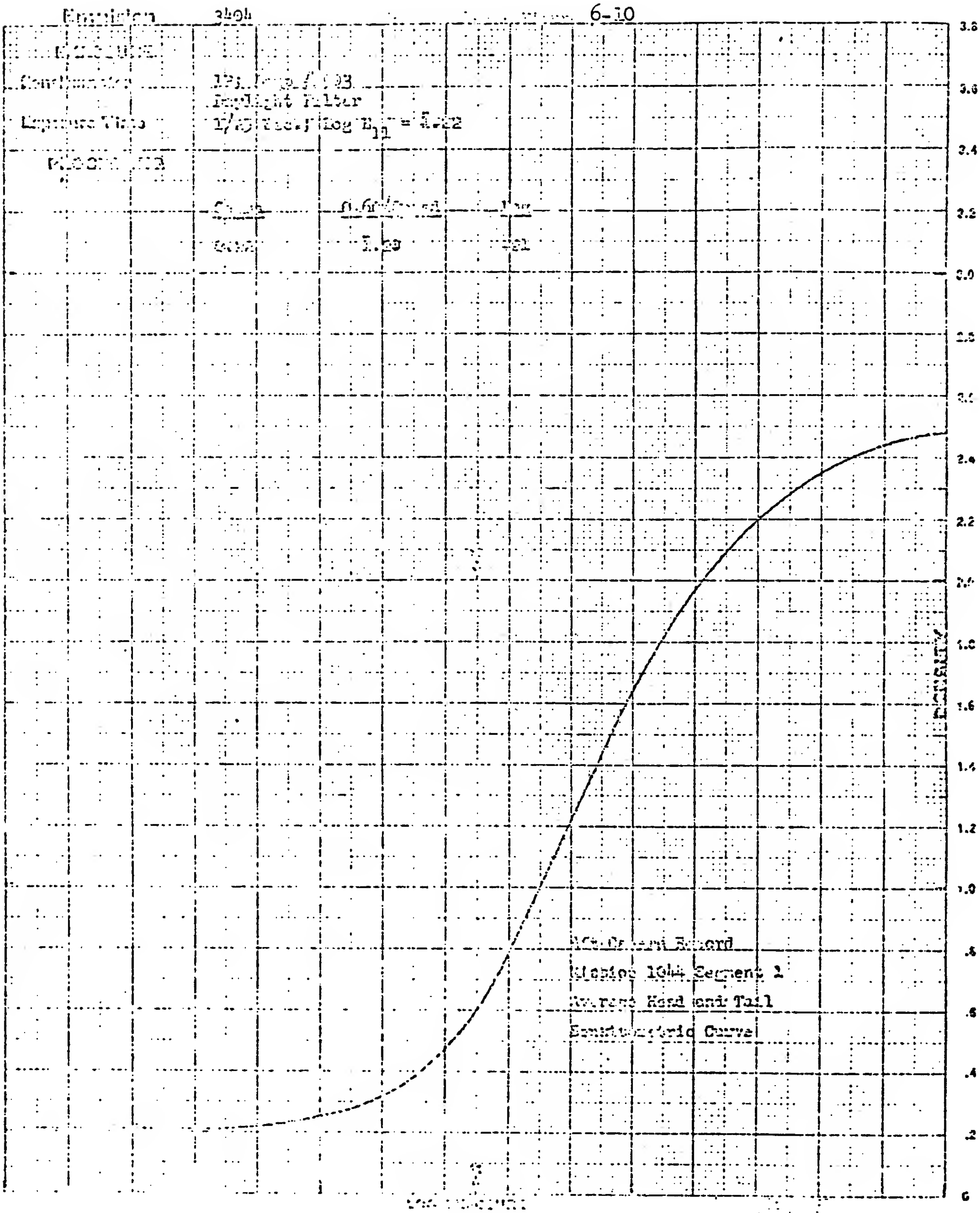
Emulsion 3404 Figure 6-9



[redacted]

C/[redacted]

[redacted]



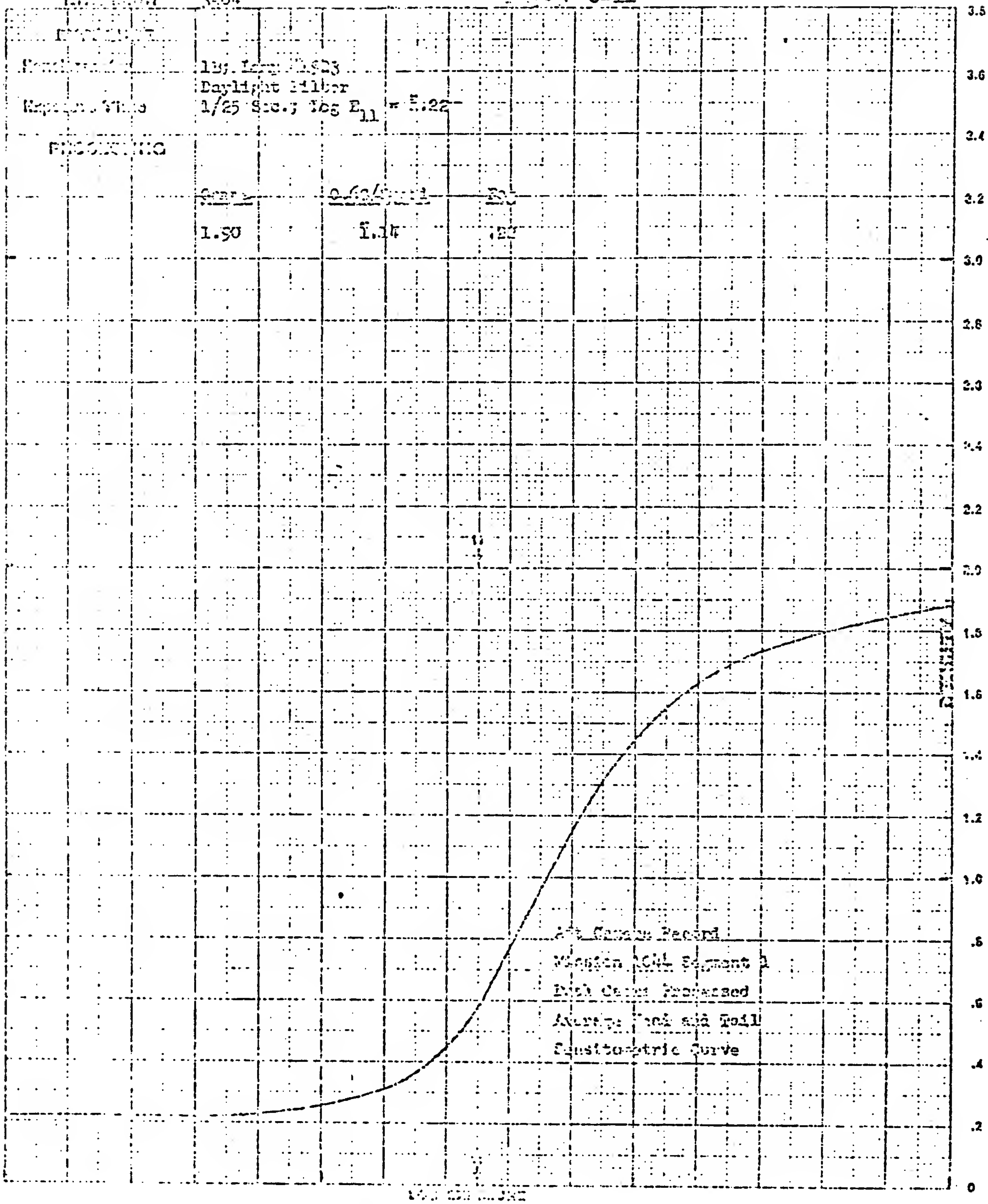
[redacted]

[redacted]

~~TOP SECRET~~

[redacted]

6-11



[redacted]

C/[redacted]

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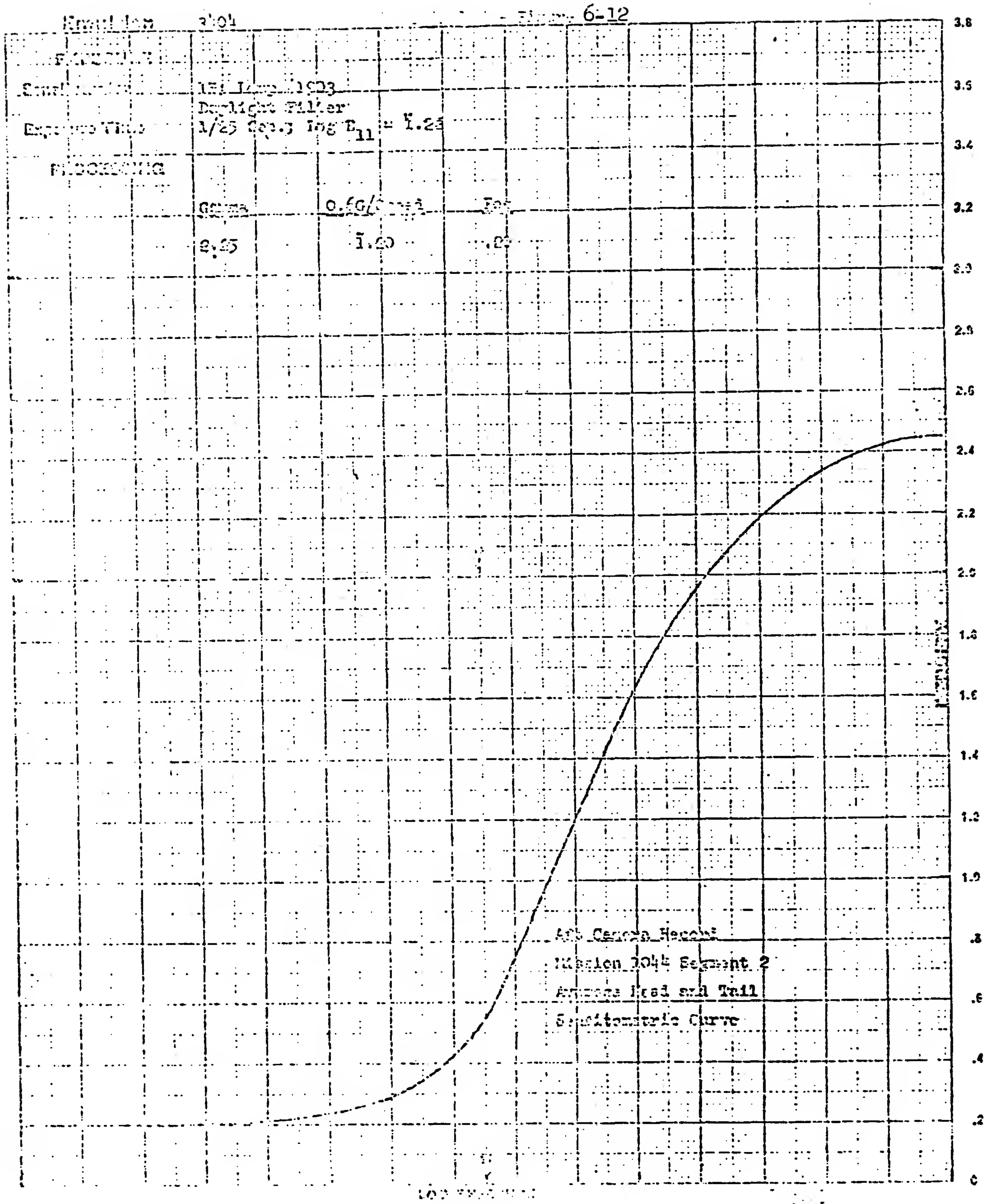
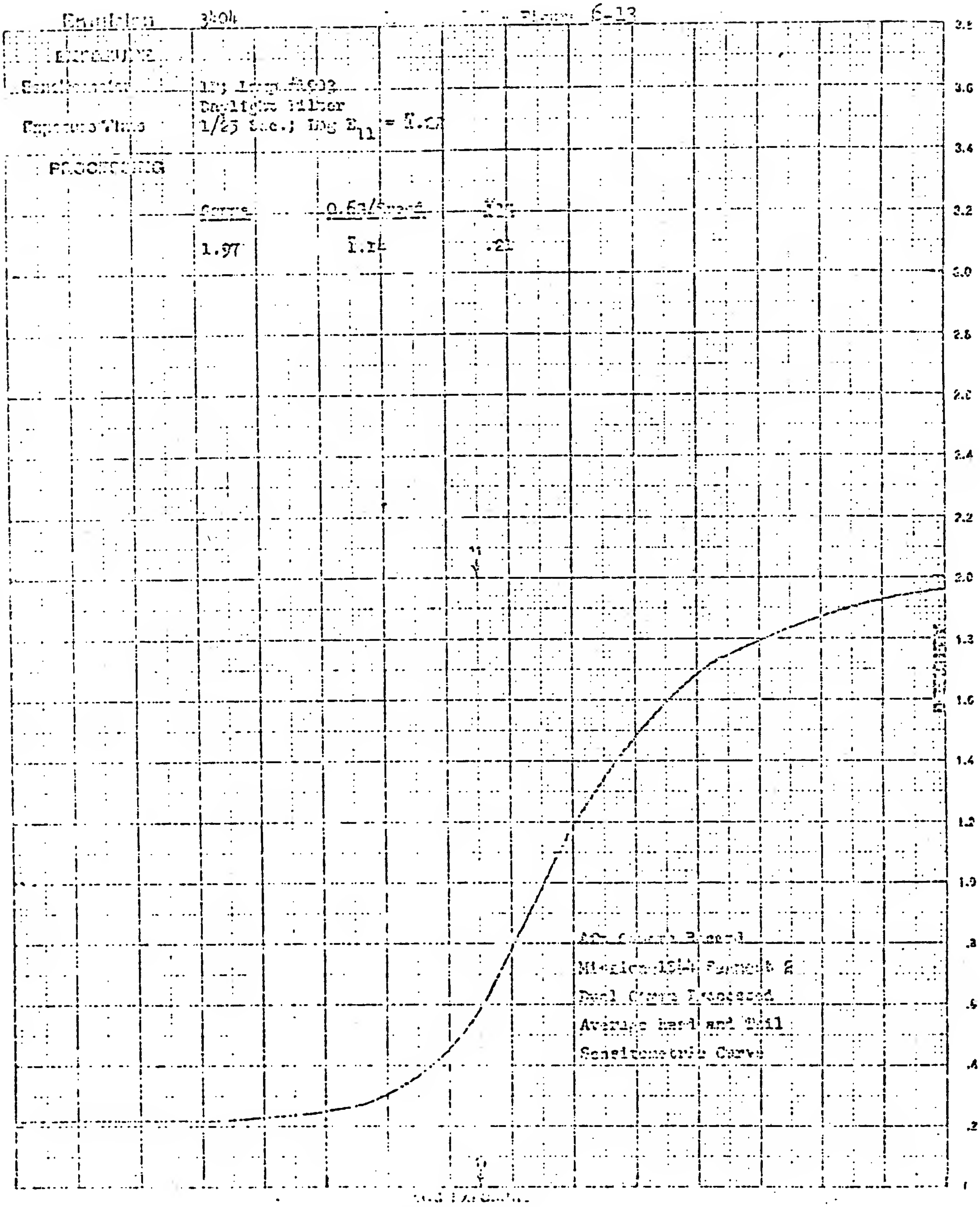


[redacted]


Emulsion 3404
6-13
EXPOSURE
Daylight Filter
PROCESSING
1.97
.22
Average Head and Tail
Sensitometric Curve
3.6
3.4
3.2
3.0
2.2
2.0
1.6
1.4
1.2
1.0
.8
.6
.4
.2

SECTION 7

VEHICLE ATTITUDE

The vehicle attitude errors for both Mission 1044-1 and 1044-2 were derived from the reduction of the Stellar camera photography. This attitude data is supplied to A/P by NPIC.

The attitude errors for each frame and the attitude control rates are calculated at the A/P computer facility. The computer also plots the frequency distribution of the rates and errors. Figures 7-2 through 7-7 show these distributions for Mission 1044-1 and Figures 7-8 through 7-13 for Mission 1044-2.

The summary table below lists the maximum attitude errors and rates that were experienced during 90 percent of the FWD camera photographic operations, excluding the first six frames of each operation, and the total range of the errors and rates.

	Mission 1044-1		Mission 1044-2	
Value	90%	Range	90%	Range
Pitch Error (°)	0.30	-0.35 to + 0.02	0.37	-0.62 to + 0.10
Roll Error (°)	0.15	-0.28 to + 0.46	0.37	-0.57 to + 0.06
Yaw Error (°)	3.42	-1.20 to + 3.80	3.31	-0.40 to + 3.60
Pitch Rate (°/hr.)	14.63	-85 to +85	23.64	-65 to +75
Roll Rate (°/hr.)	26.23	-58 to +76	30.62	-85 to +50
Yaw Rate (°/hr.)	51.28	-98 to +24	29.78	-80 to +10

The yaw angle error represents the difference between the actual vehicle yaw attitude and the ideal yaw angle that would provide correct ground image motion. Because of a pre-flight programming error in the

placement of the function start position, the yaw programmer was approximately 800 seconds out of phase with the desired performance. The large yaw angle error indicated reflects this condition. Figure 7-1 graphically depicts these relationships. The effects on image quality are discussed in Sections 4 and 8.

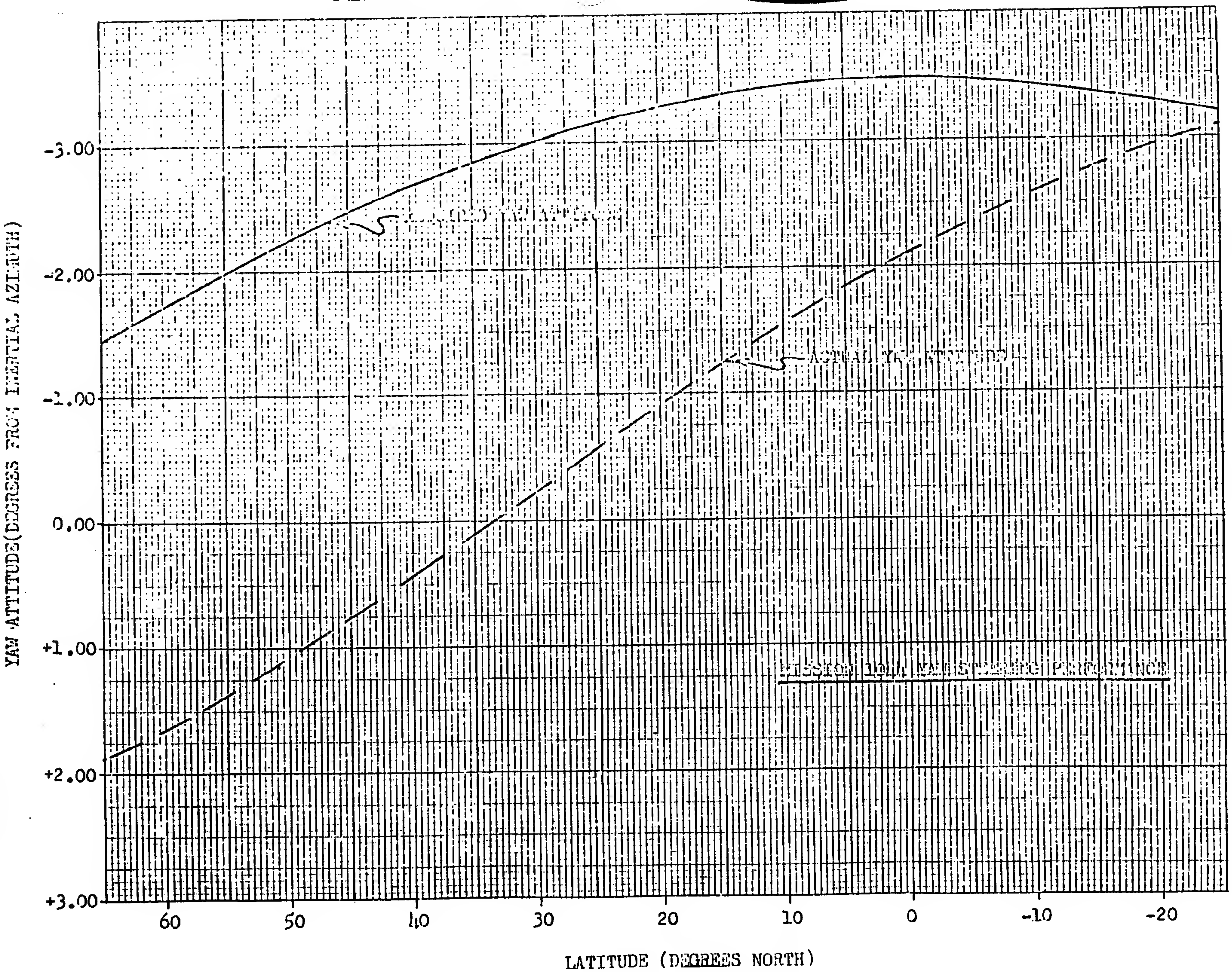
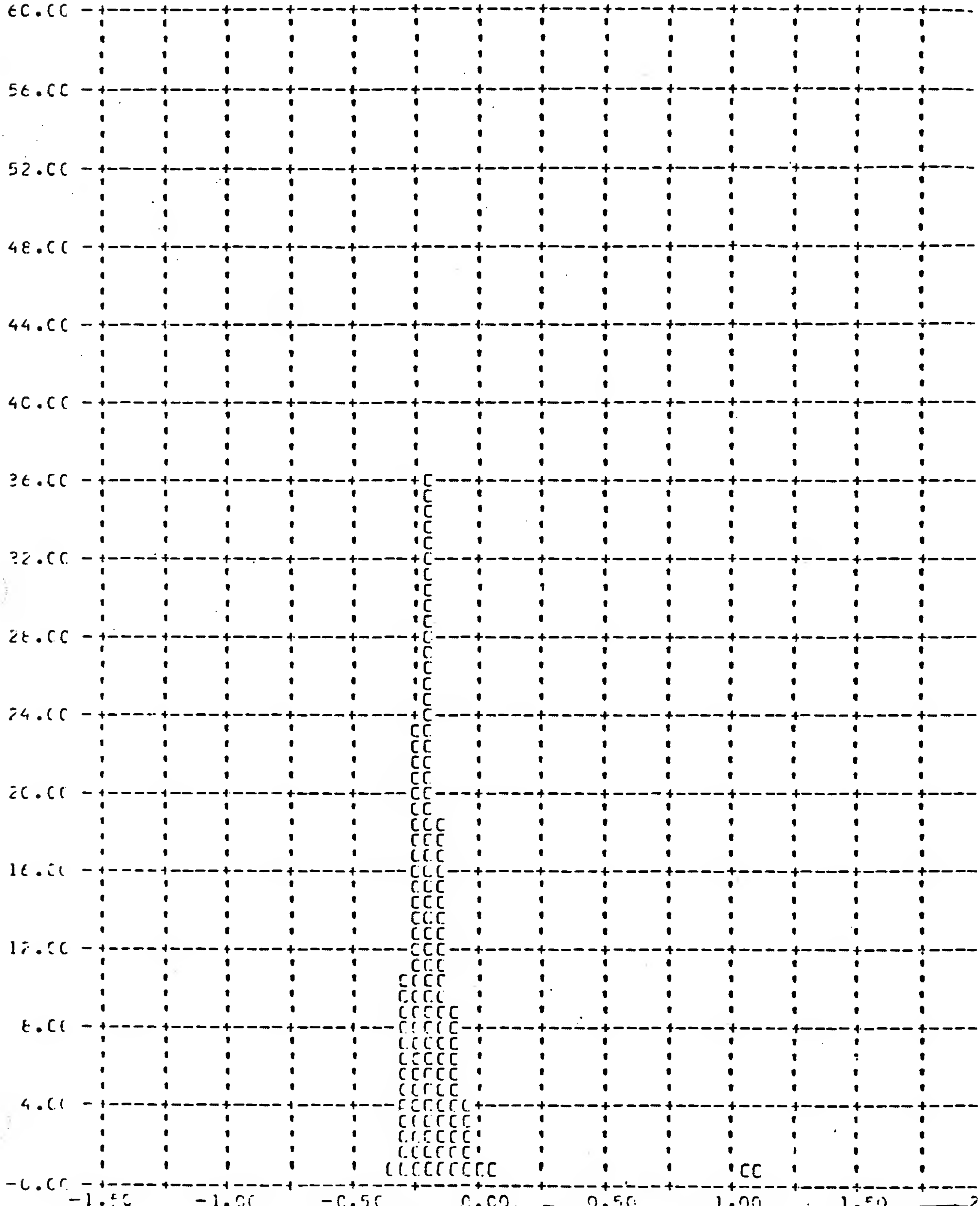

YAW ATTITUDE(DEGREES FROM INERTIAL AZIMUTH)
-3.00
-2.00
-1.00
0.00
+1.00
+2.00
+3.00
60
50
40
30
20
10
0
-10
-20
LATITUDE (DEGREES NORTH)

FIGURE 7-1

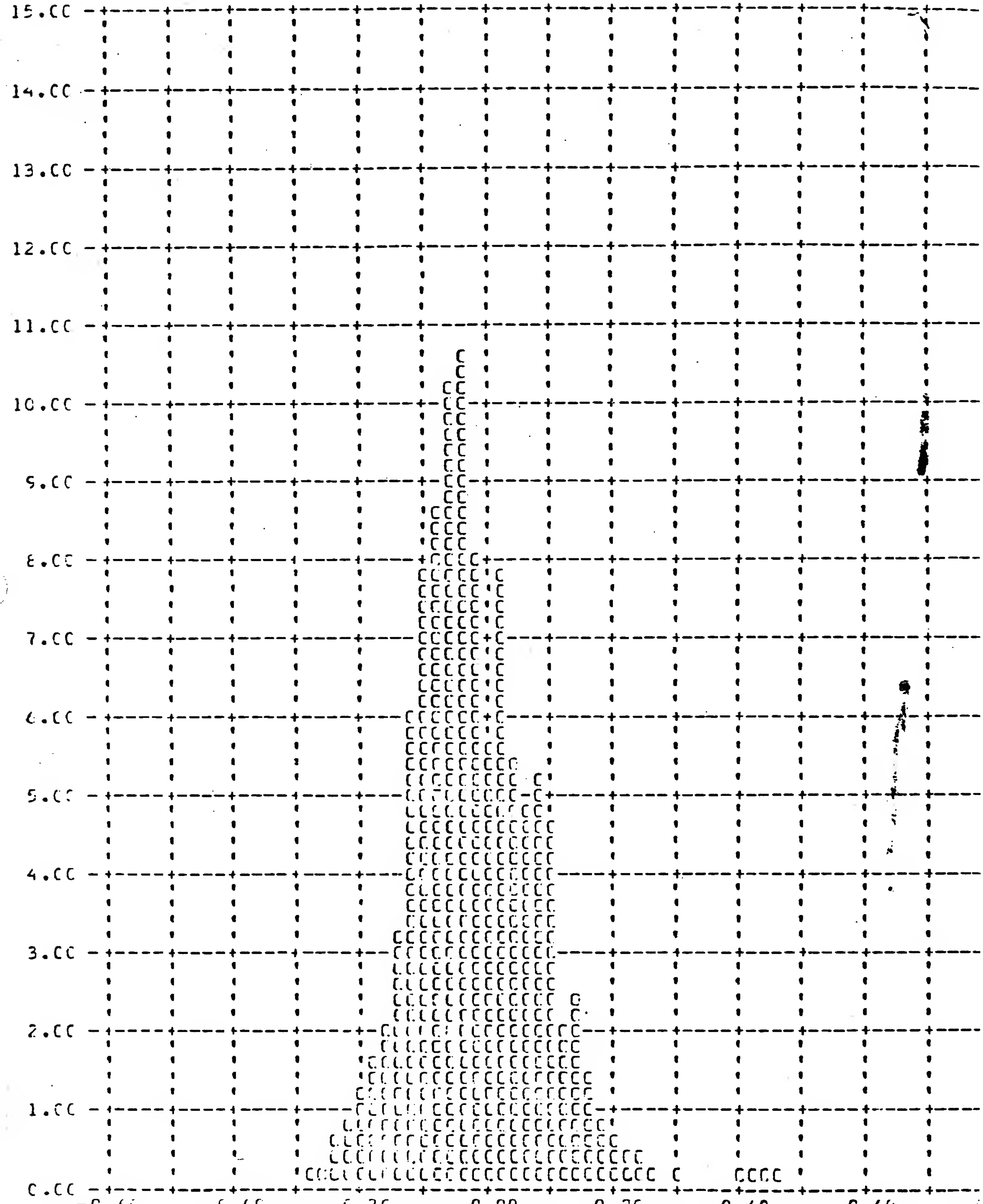
FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT [redacted]

Y PITCH ANGLE ERROR - DEGREES (X) VERSUS FREQUENCY - PERCENT (Y)



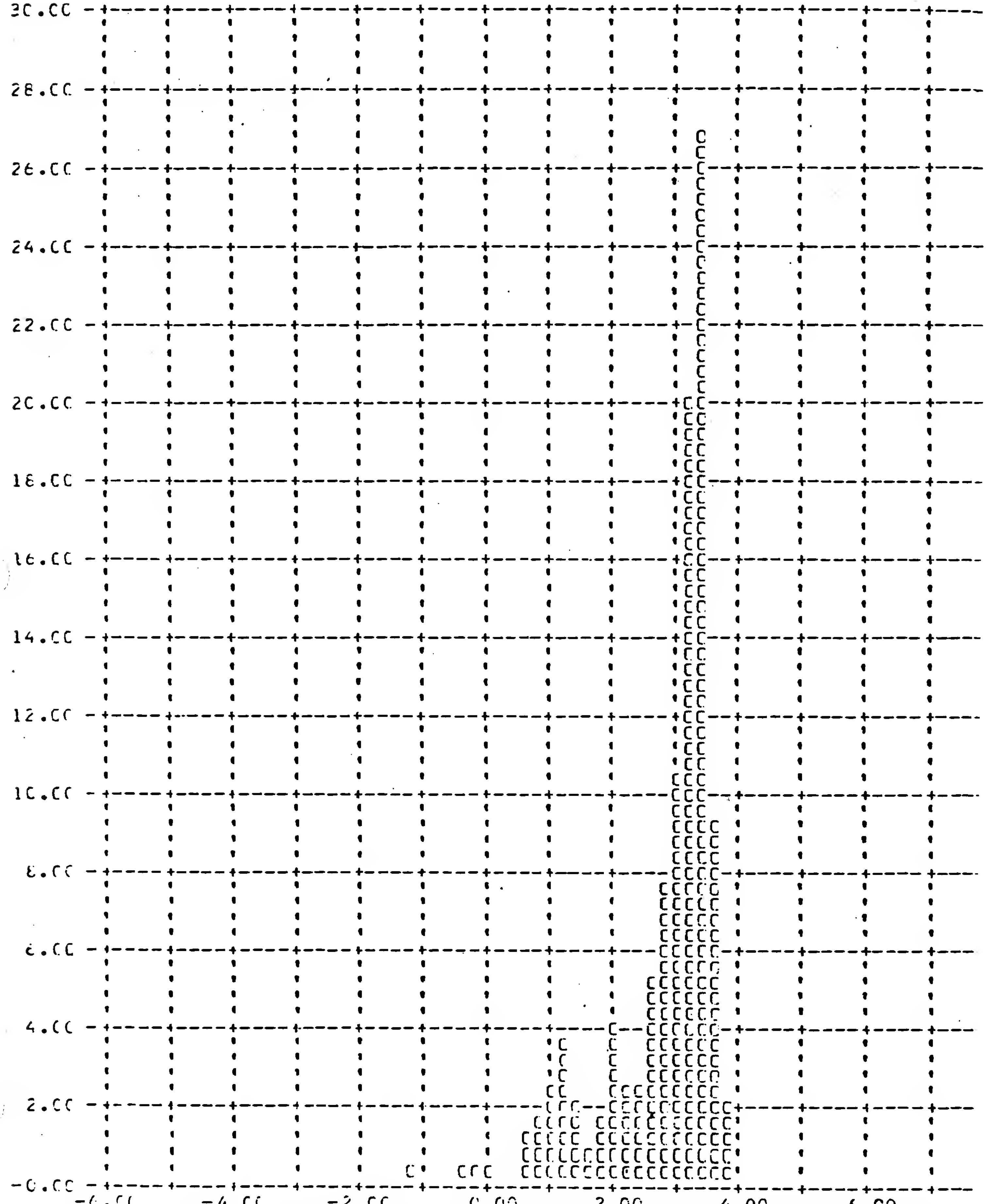
FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 0.

Y ROLL ANGLE ERROR - DEGREES (X) VERSUS FREQUENCY - PERCENT (Y)



MISSION 1044A1 ~~TOP SECRET~~ C[redacted] CONTROL NO.[redacted]
FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 3.

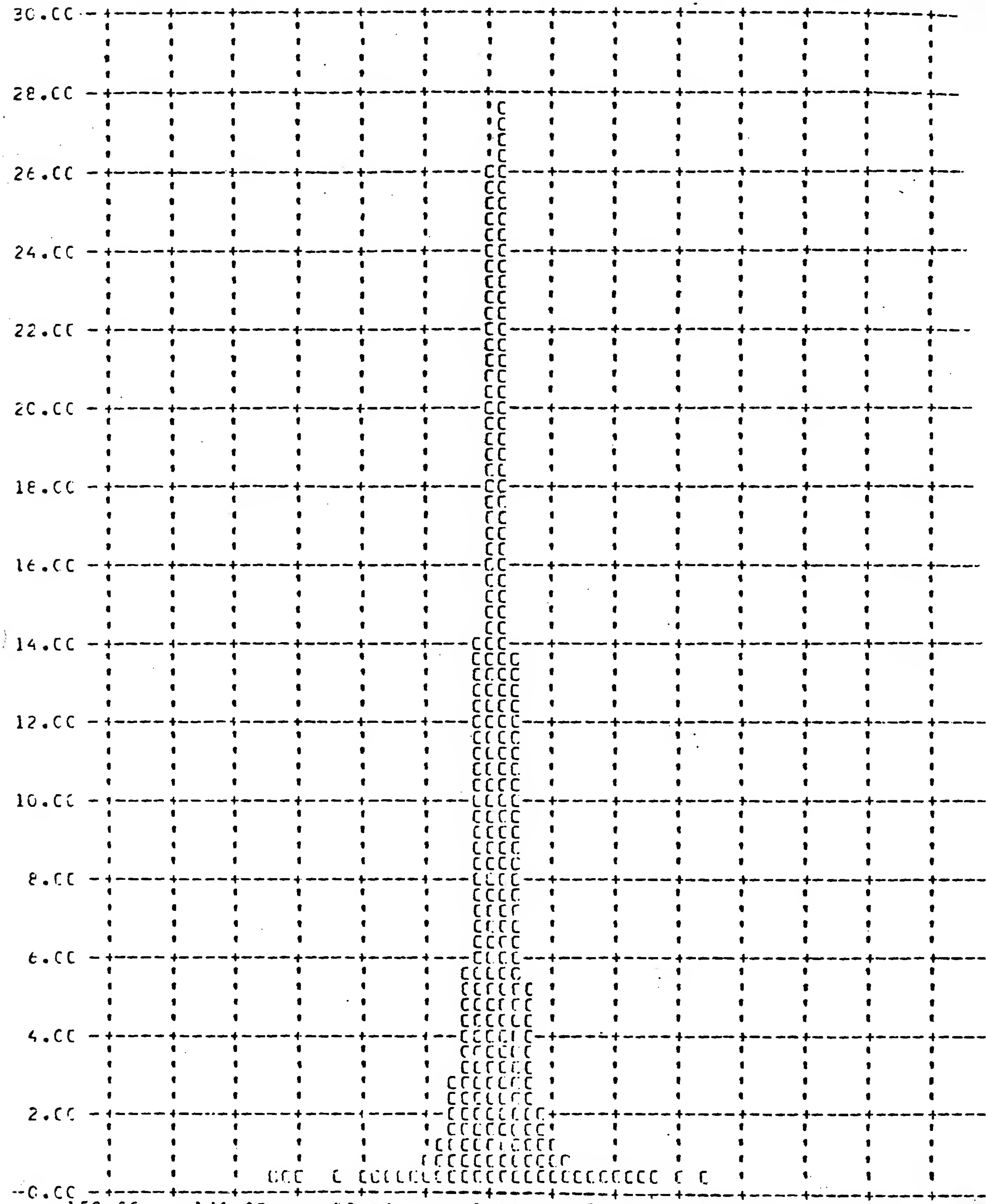
Y YAW ANGLE ERROR - DEGREES (X) VERSUS FREQUENCY - PERCENT (Y)



MISSION 1044A1 ~~TOP SECRET~~ C[redacted] CONTROL NO.[redacted]

CONTROL NO. [redacted]
FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = [redacted]

Y PITCH RATE ERROR - DEG/HOUR (X) VERSUS FREQUENCY - PERCENT (Y)

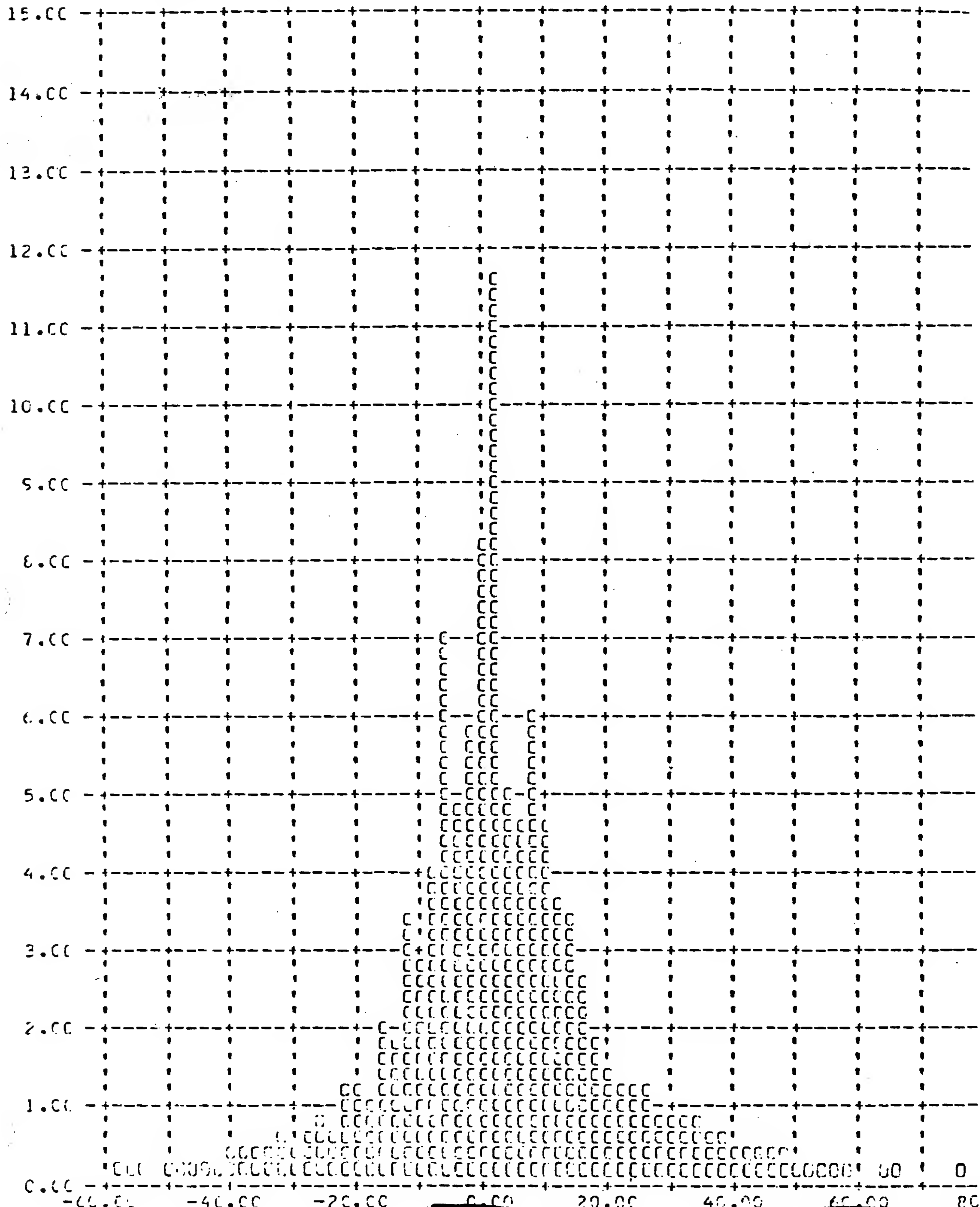


MISSION 1044A1 ~~TOP SECRET~~ C[redacted] CONTROL NO. [redacted]

Figure 7-5

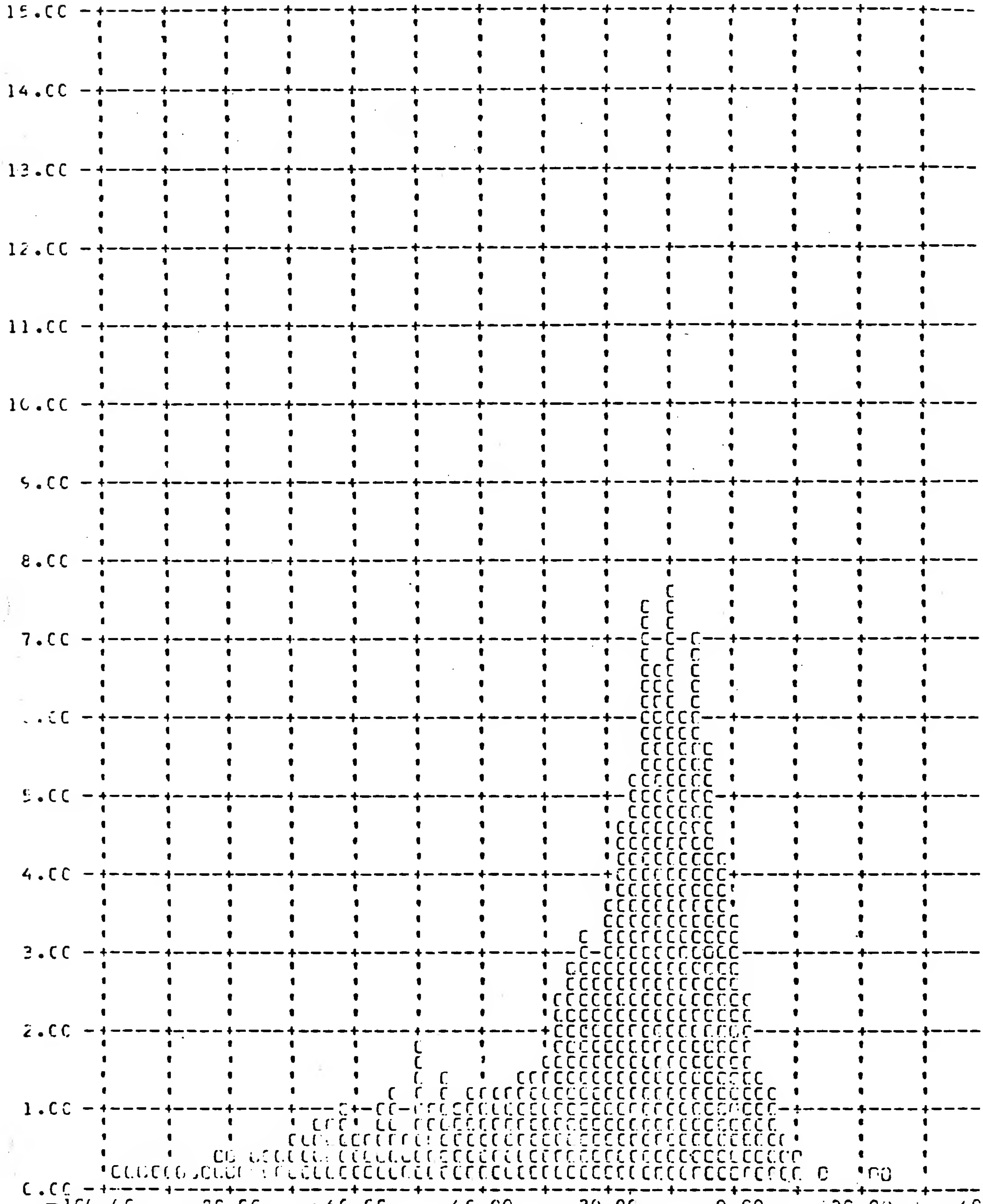
FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT - 26.

Y ROLL RATE ERROR - DEG/HOUR (X) VERSUS FREQUENCY - PERCENT (Y)



FRAMES 1-6 OF EACH OP OMITTED 90 [redacted]

Y YAW RATE ERROR - DEG/HOUR (X) VERSUS FREQUENCY - PERCENT (Y)

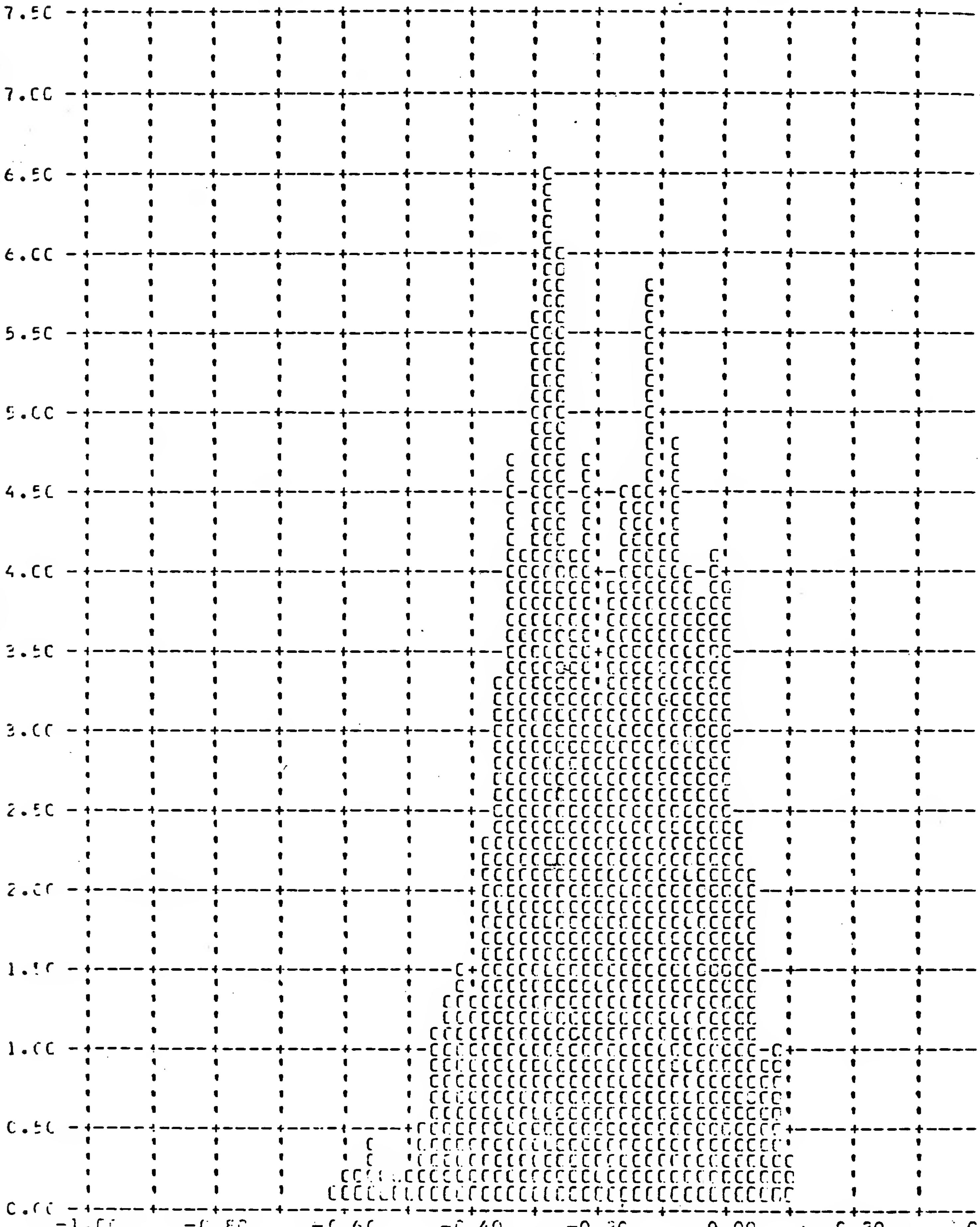


MISSION 1044A1 ~~TOP SECRET~~ C[redacted] CONTROL NO. [redacted]

Figure 7-7

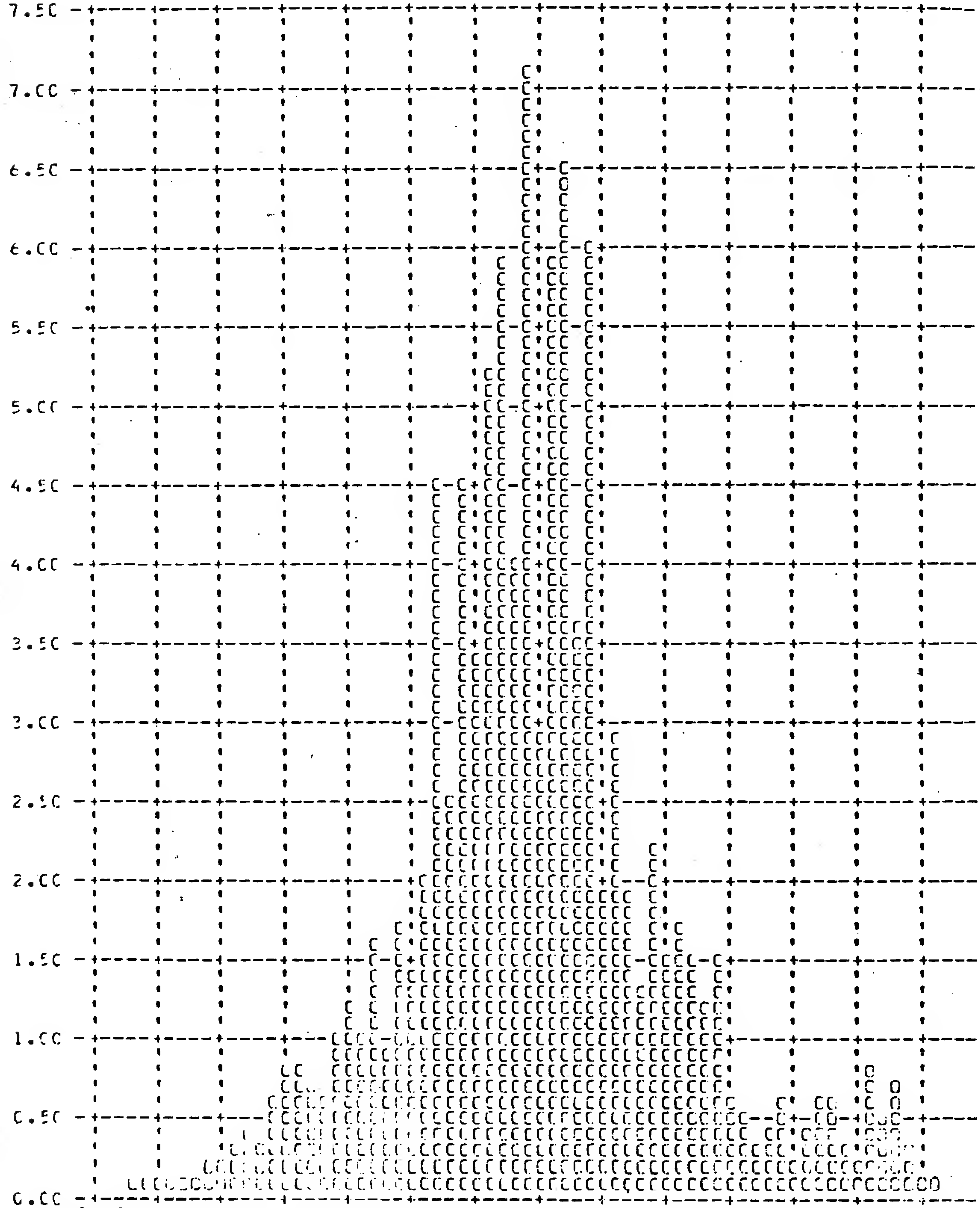
FRAMES 1-6 OF EACH OF OMITTED 90 PERCENT = 0.

Y PITCH ANGLE ERROR - DEGREES (X) VERSUS FREQUENCY - PERCENT (Y)

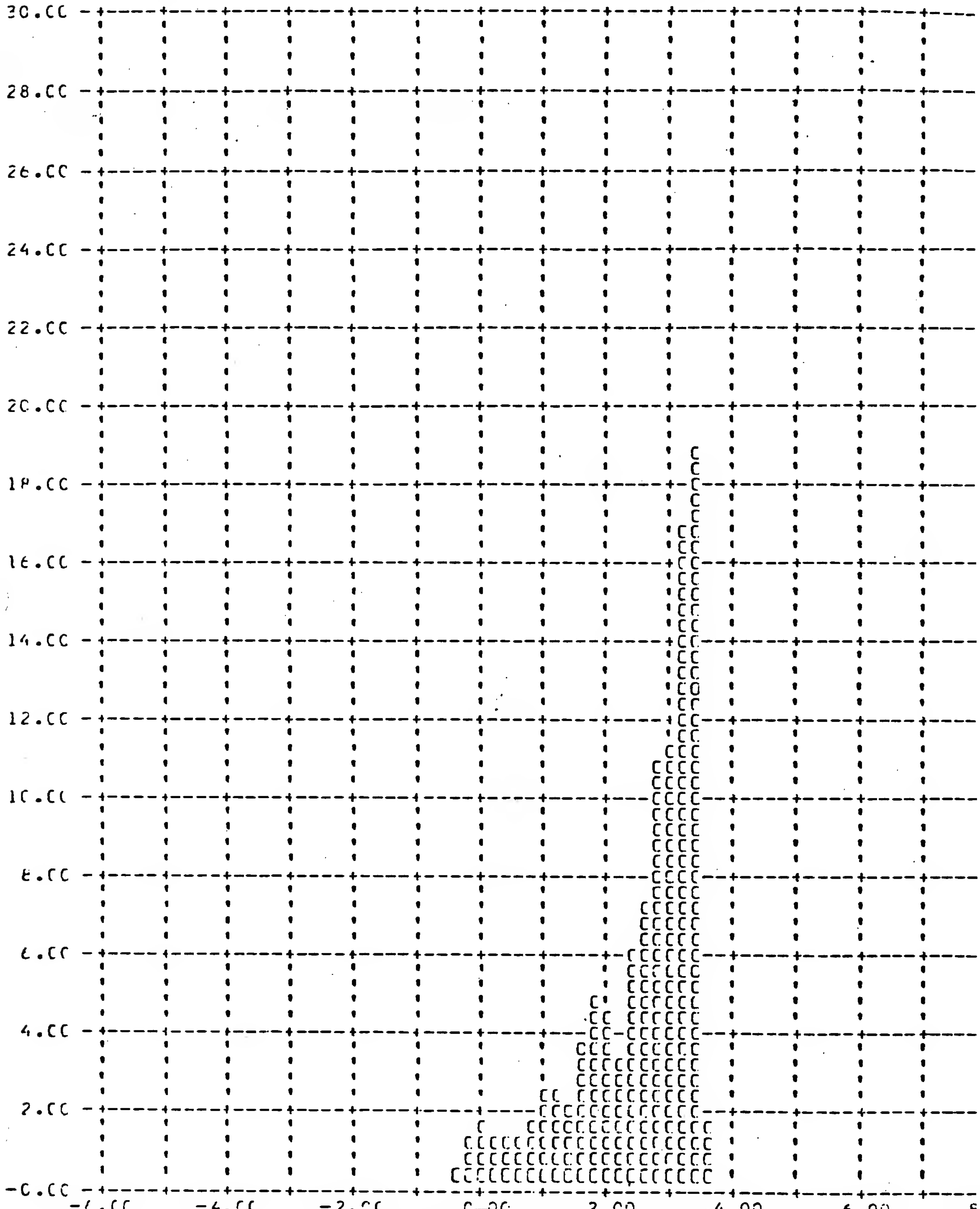


FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 0.

Y ROLL ANGLE ERROR - DEGREES (X) VERSUS FREQUENCY - PERCENT (Y)

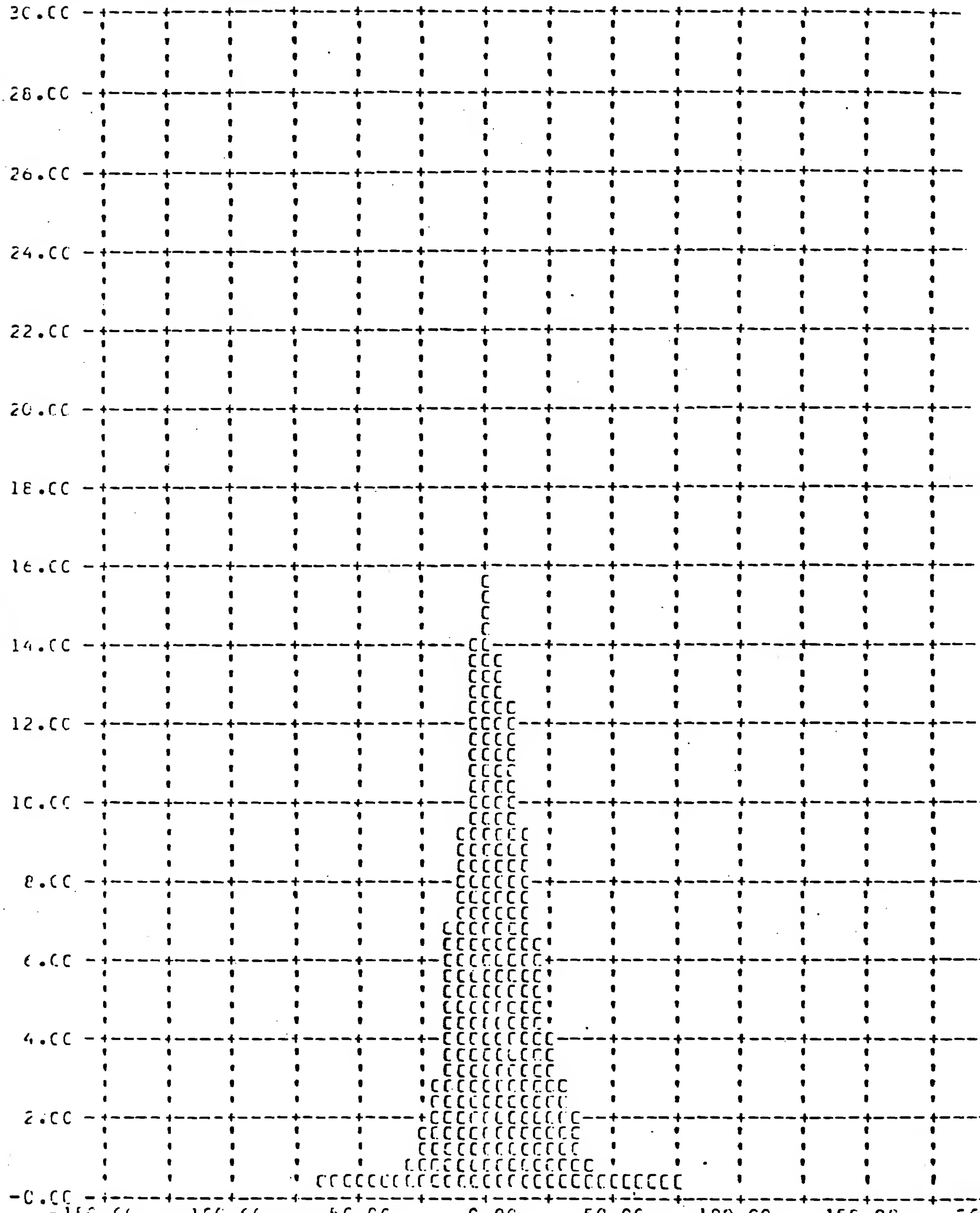


Y YAW ANGLE ERROR - DEGREES (X) VERSUS FREQUENCY - PERCENT (Y)



[redacted] - CONTROL NO. [redacted]
FRAMES 1-6 OF EACH OP OMITTED   90 PERCENT = [redacted]

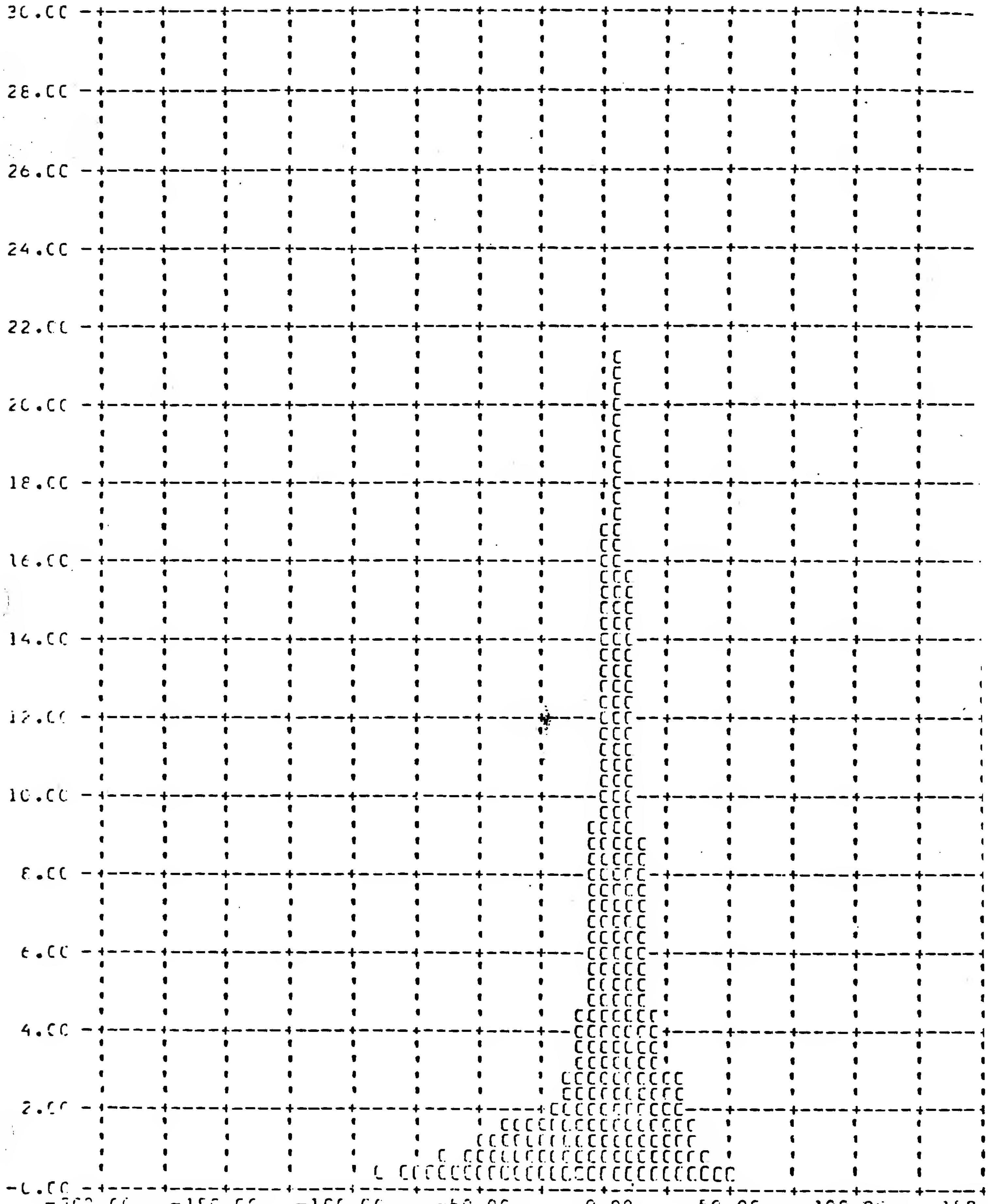
Y   PITCH RATE ERROR - DEG/HOUR (X) VERSUS FREQUENCY - PERCENT (Y)



MISSION 1044B1 ~~TOP SECRET~~ C[redacted] - CONTROL NO. [redacted]

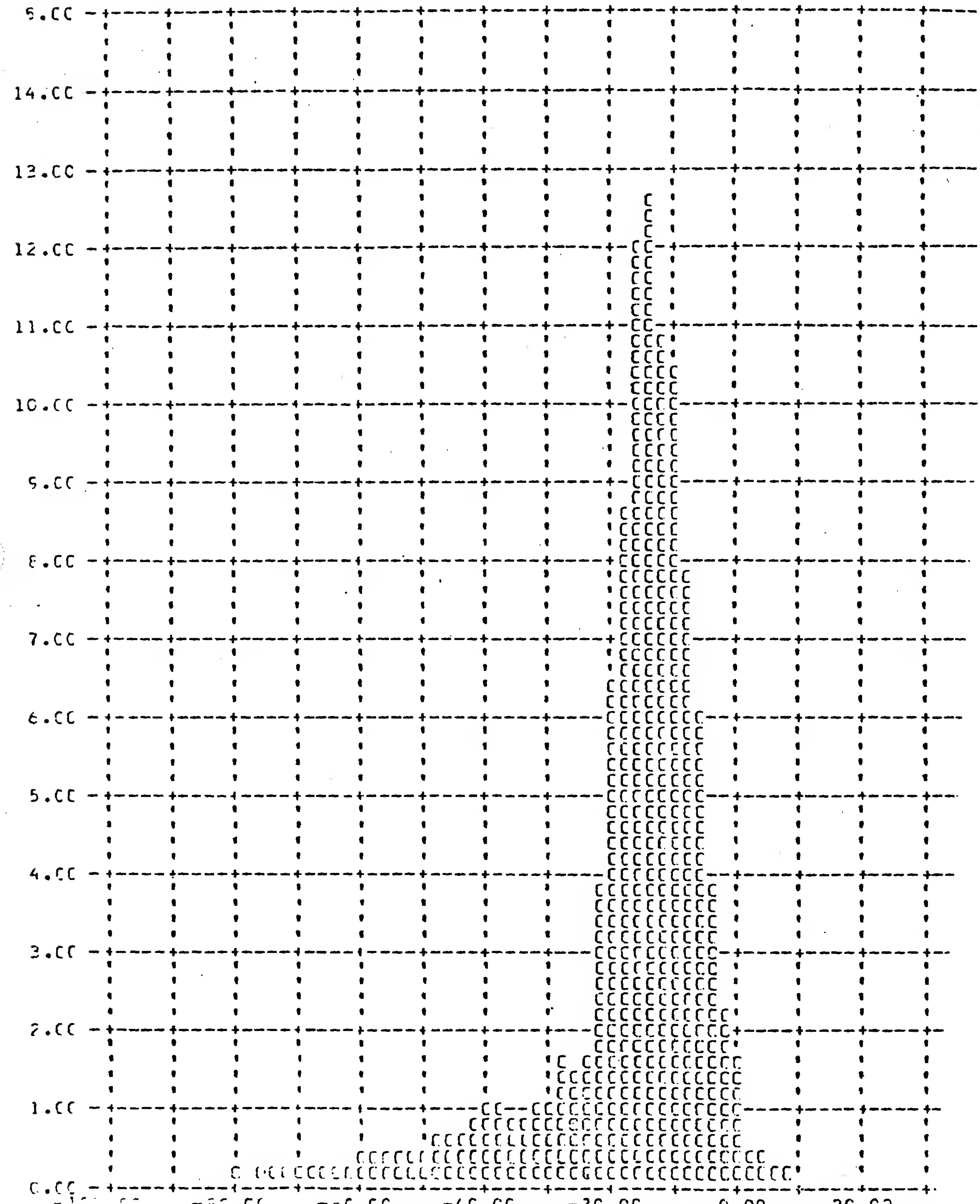
FRAMES 1-6 OF EACH OP OMITTED   90 PERCENT = 30.

Y   ROLL RATE ERROR - DEG/HOUR (X) VERSUS FREQUENCY - PERCENT (Y)



MISSION 1C4481 TOP SECRET C[redacted]- CONTROL NO.[redacted]
FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 29.

Y YAW RATE ERROR - DEG/HOUR (X) VERSUS FREQUENCY - PERCENT (Y)



[redacted]- CONTROL NO. [redacted]

SECTION 8

IMAGE SMEAR ANALYSIS

The frame correlation tape supplied to A/P by NPIC contains the binary time word of each frame of photography. A computer program has been assembled at A/P which calculates the exposure time of each frame and compares the camera cycle rate with the ephemeris to calculate the V/h mismatch (Section 3), which is then combined with the vehicle attitude error and rate values of each frame and the crab error caused by earth rotation at the latitude of each frame. The program outputs the net IMC error and the total along track and cross track limit of ground resolution that can be acquired by a camera regardless of focal length and system capabilities.

The computer rejects the first six frames of all operations as the large V/h error induced by camera start-up is not representative of the overall system operations. The frequency distribution of the IMC errors and resolution limits are computer plotted and are shown in Figures 8-1 through 8-12.

The summary table 8-1 presents the maximum IMC errors and resolution limits that existed during 90% of the photographic operations and the total range of values during all operations that were computed.

The relatively high values obtained in Mission 1044 reflect the combined effects of imperfect V/h and yaw steering matching as discussed in Sections 3 and 7. The apparent discrepancy in resolution limit values between the forward and aft-looking instruments is, in reality, a dramatic illustration of the relative influence of the difference in exposure time when coupled with smear contributing V/h and attitude errors.

MISSION 1044

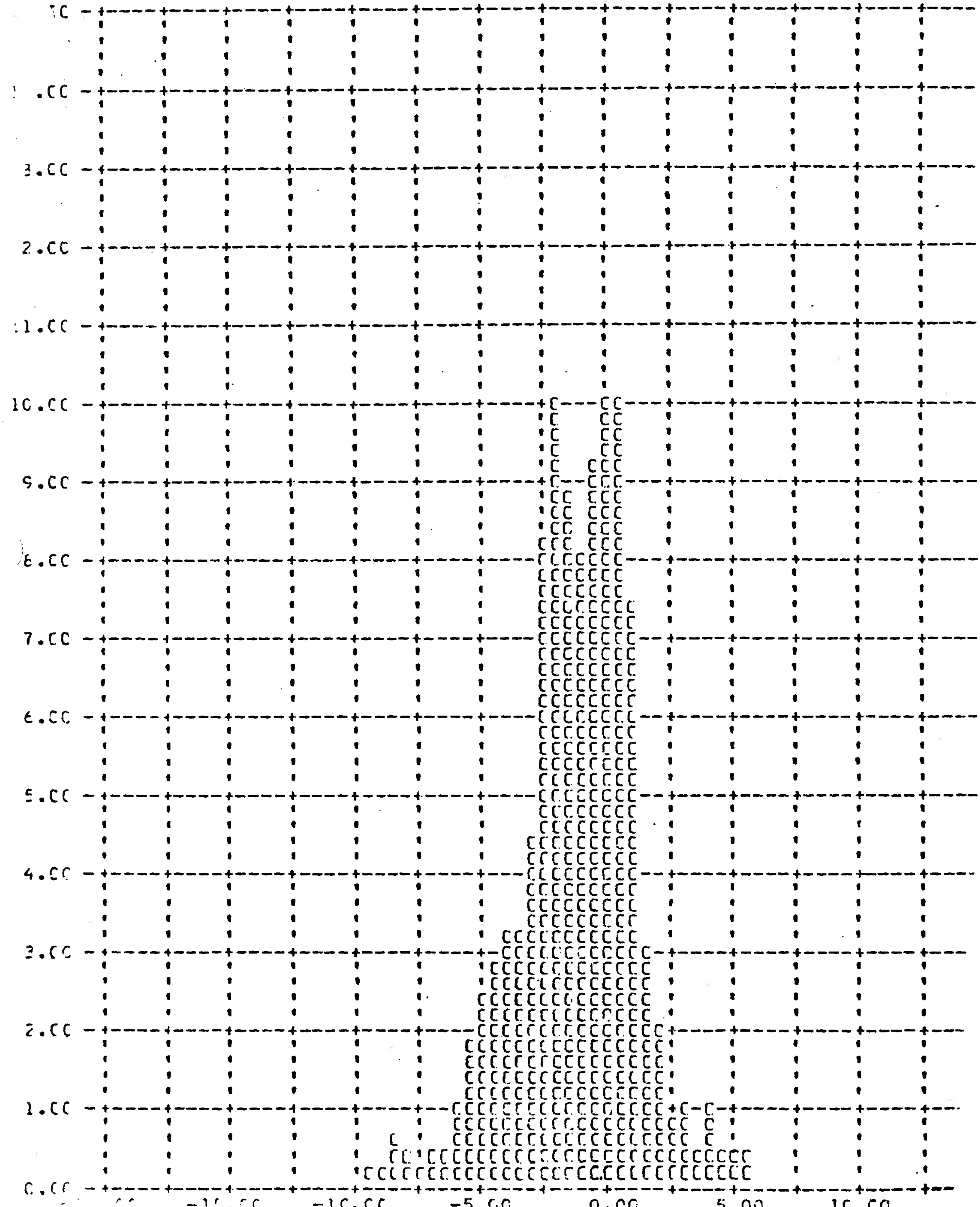
IMC RATIO AND RESOLUTION LIMITS

			MISSION 1044-1		MISSION 1044-2	
VALUE	UNITS	CAMERA	90%	RANGE	90%	RANGE
IMC Ratio Error	%	FWD	4.55	-9.5 to +5.5	3.21	-5.4 to +6.0
		AFT	4.06	-10.0 to +6.5	3.26	-5.6 to +6.2
Along Track Resolution Limit	Feet	FWD	6.98	0.2 to 13.6	4.38	0.2 to 8.8
		AFT	4.36	0.2 to 9.8	3.25	0.2 to 6.6
Cross Track Resolution Limit	Feet	FWD	9.75	0.2 to 11.0	8.39	0.2 to 10.4
		AFT	6.19	0.2 to 7.6	5.30	0.2 to 6.0

TABLE 8-1

MISSION 1044A1 ~~TOP SECRET~~ C[redacted]- CONTROL NO.[redacted]
FRAMES 1-6 OF EACH OF OMITTED 90 PERCENT = 4.5

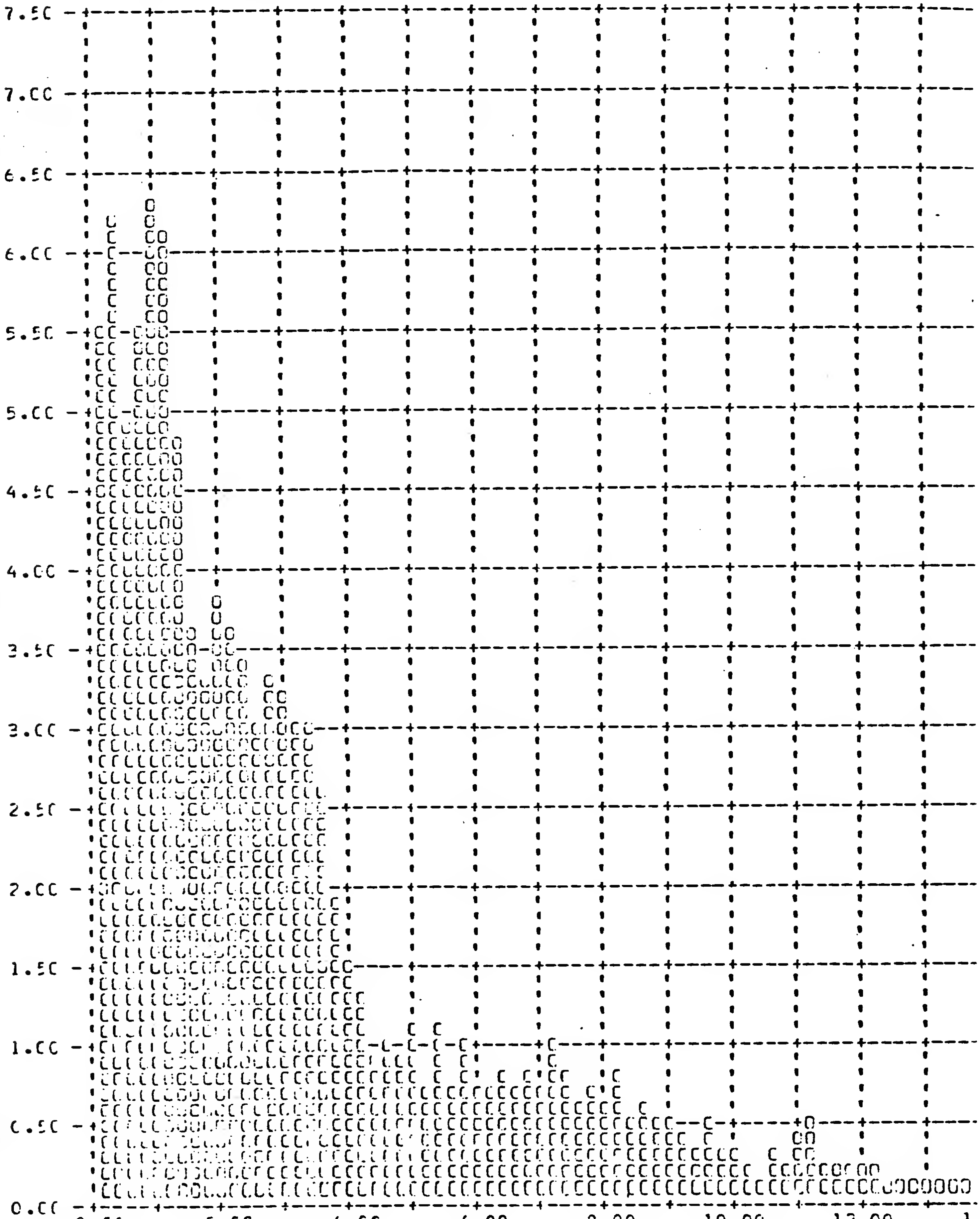
Y INC ERROR -- PERCENT (X) VERSUS FREQUENCY -- PERCENT (Y)



C[redacted]- CONTROL NO.[redacted]

MISSION 1C44A1 ~~TOP SECRET~~ C[redacted] CONTROL NO.[redacted]
FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 6.

Y ALONG TRACK RESOLUTION LIMIT - FEET (X) VERSUS FREQUENCY - PERCENT (



~~TOP SECRET~~ C [redacted]

MISSION * 1044-1 * INSTR * FWD * 1/16/68 PLOT OF D MAX * CLOUD * PROCESSING * FULL

ARITH MEAN * 2.05 * MEDIAN * 2.18 * STD DEV * 0.33 * RANGE * 0.31 TO 2.45 WITH 128 SAMPLES

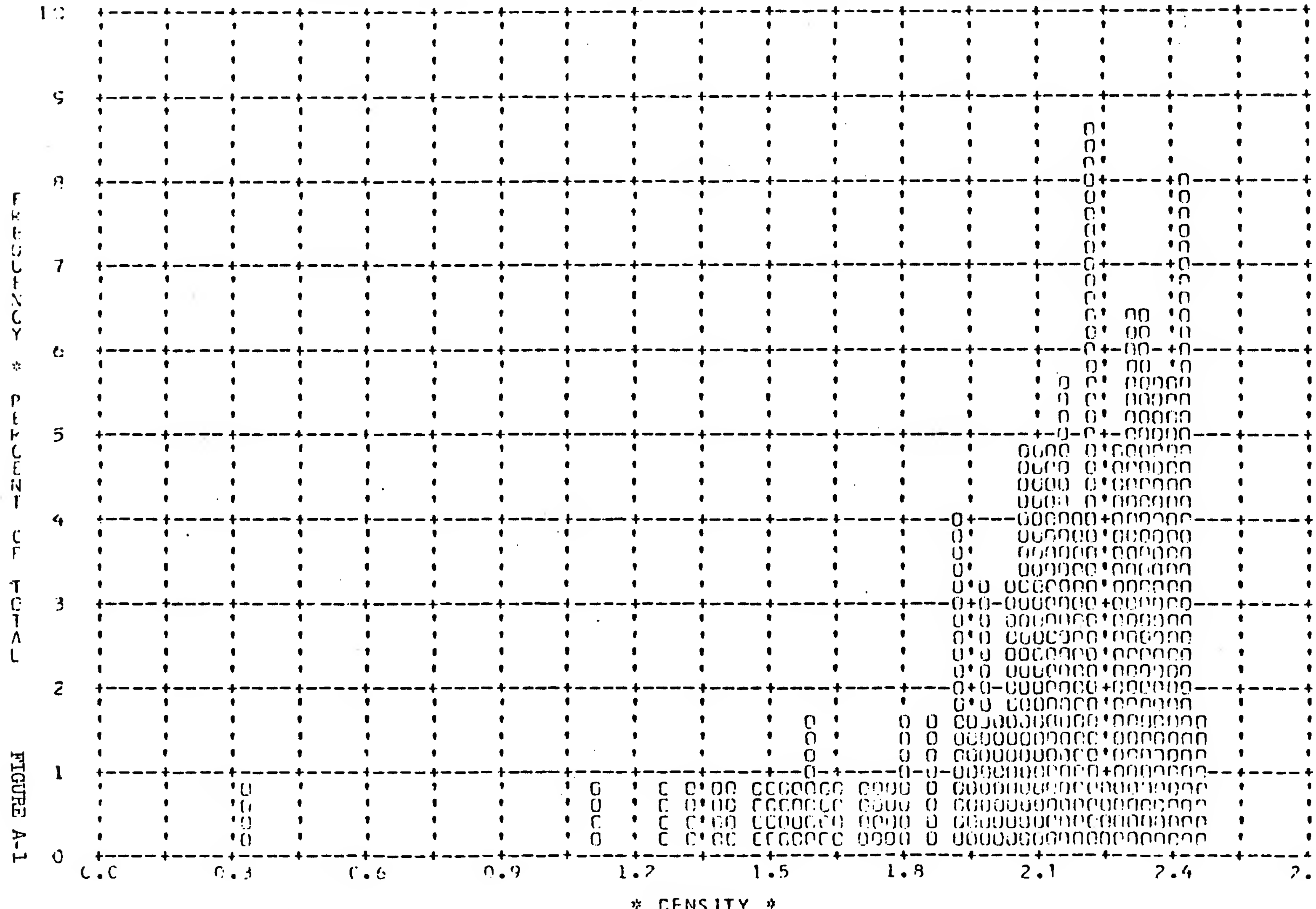


FIGURE A-1

~~TOP SECRET~~ C [redacted]

MISSION * 1044-1 * INSTF * FWD * 1/16/68 PLOT OF D MIN * TERRAIN * PROCESSING * ALL LEVELS

ARITH MEAN * 0.50 * MEDIAN * 0.42 * STD DEV * 0.30 * RANGE * 0.23 TO 1.78 WITH 160 SAMPLES

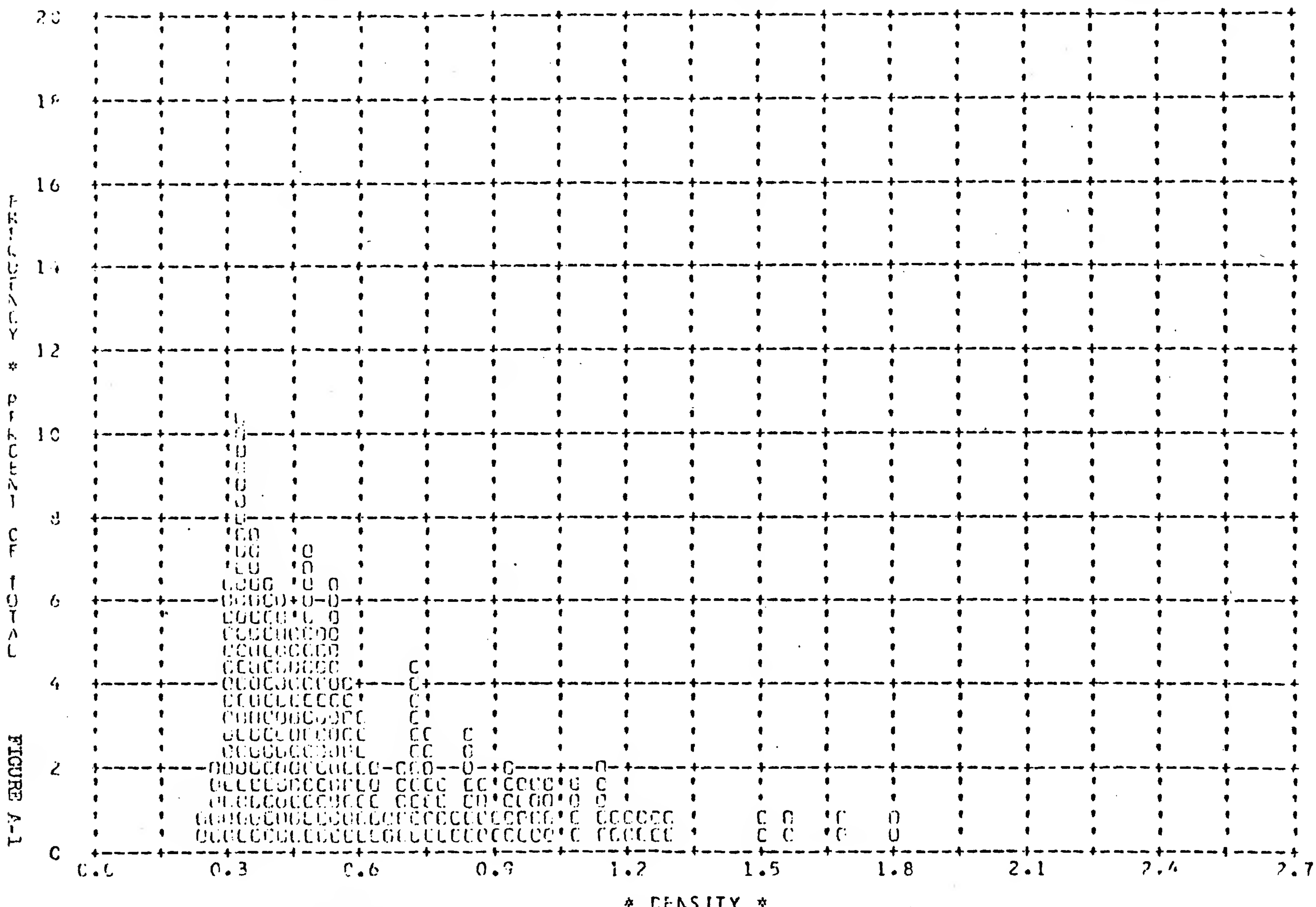


FIGURE A-1

MISSION * 1044-1 * INSTR * FWD * 1/16/68 PLOT OF D MAX * TERRAIN * PROCESSING * ALL LEVELS

ARITH MEAN * 1.[illegible] * MEDIAN * 1.59 * STD DEV * 0.39 * RANGE * 0.67 TO 2.36 WITH 160 SAMPLES

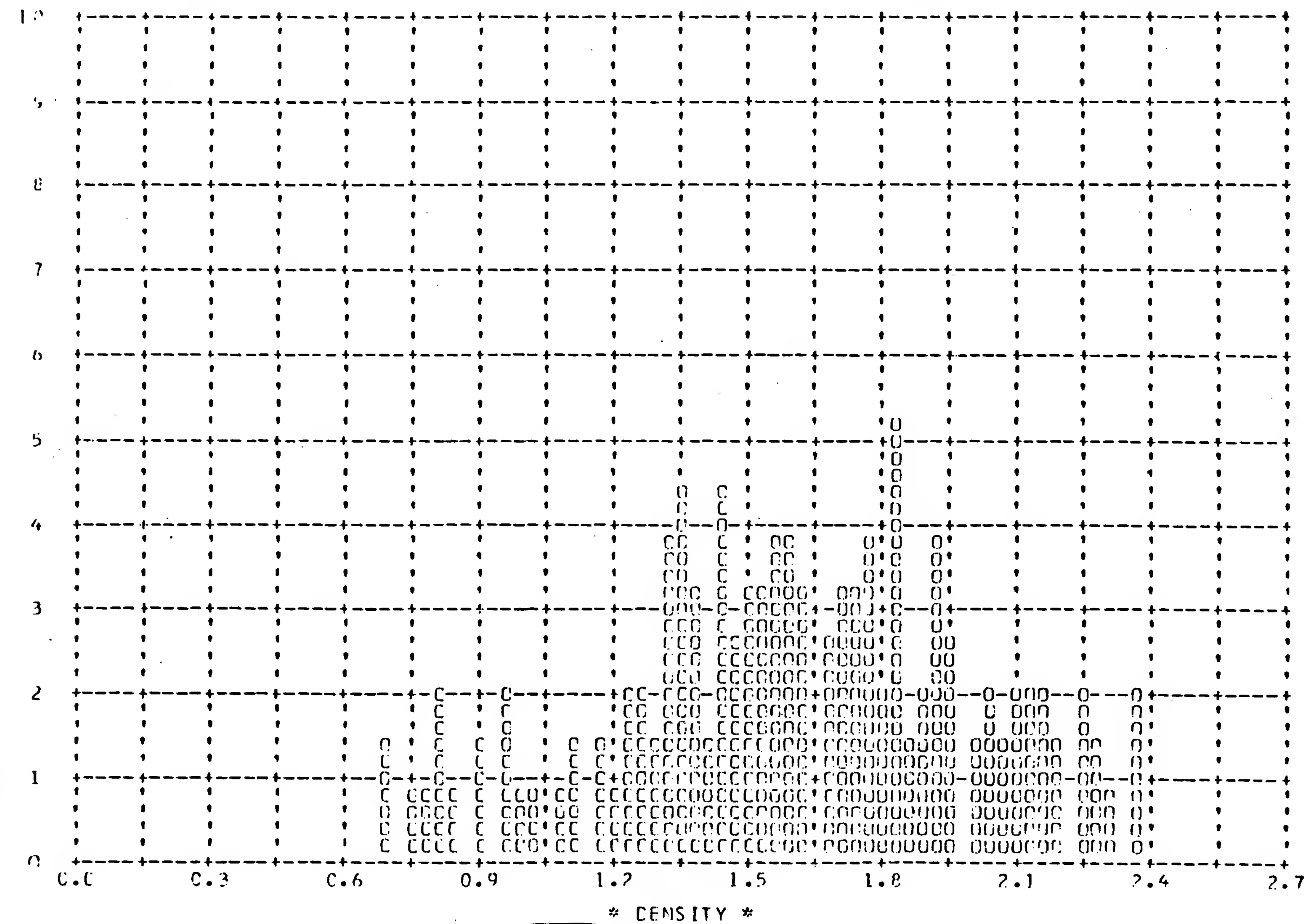


FIGURE A-1

MISSION * 1044-1 * INSTR * FWD * 1/16/68 PLOT OF D MAX * CLOUD * PROCESSING * ALL LEVELS

ARITH MEAN * 2.[illegible] * MEDIAN * 2.16 * STD DEV * 0.32 * RANGE * 0.31 TO 2.45 WITH 141 SAMPLES

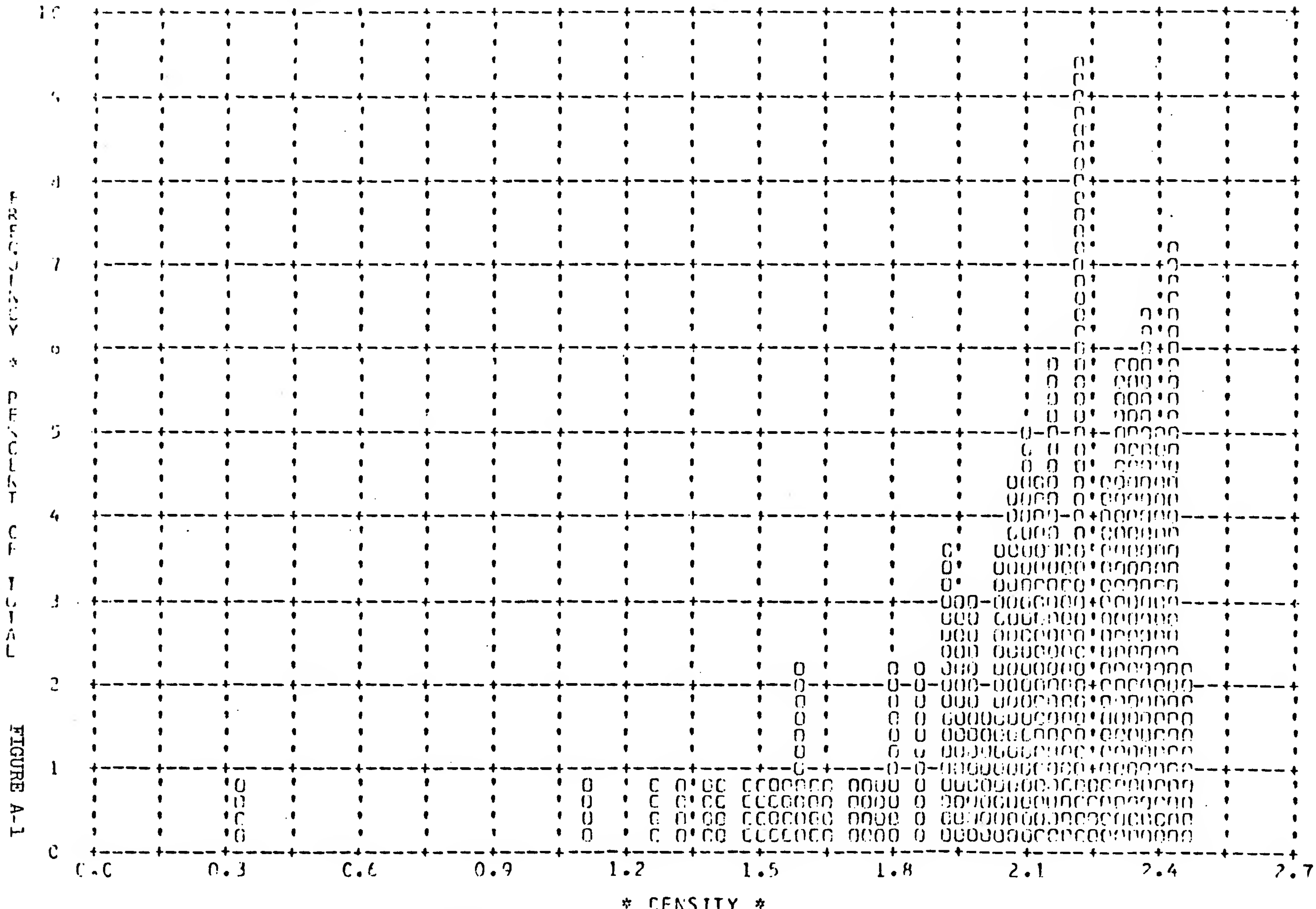


FIGURE A-1

[redacted]

MISSION * 1044-1 * INSTR * FWD * 1/16/68 PLOT OF D MIN * TERRAIN * PROCESSING * DUAL GAMMA

ARITH MEAN * 0.44 * MEDIAN * 0.40 * STD DEV * 0.17 * RANGE * 0.24 TO 0.93 WITH 67 SAMPLES

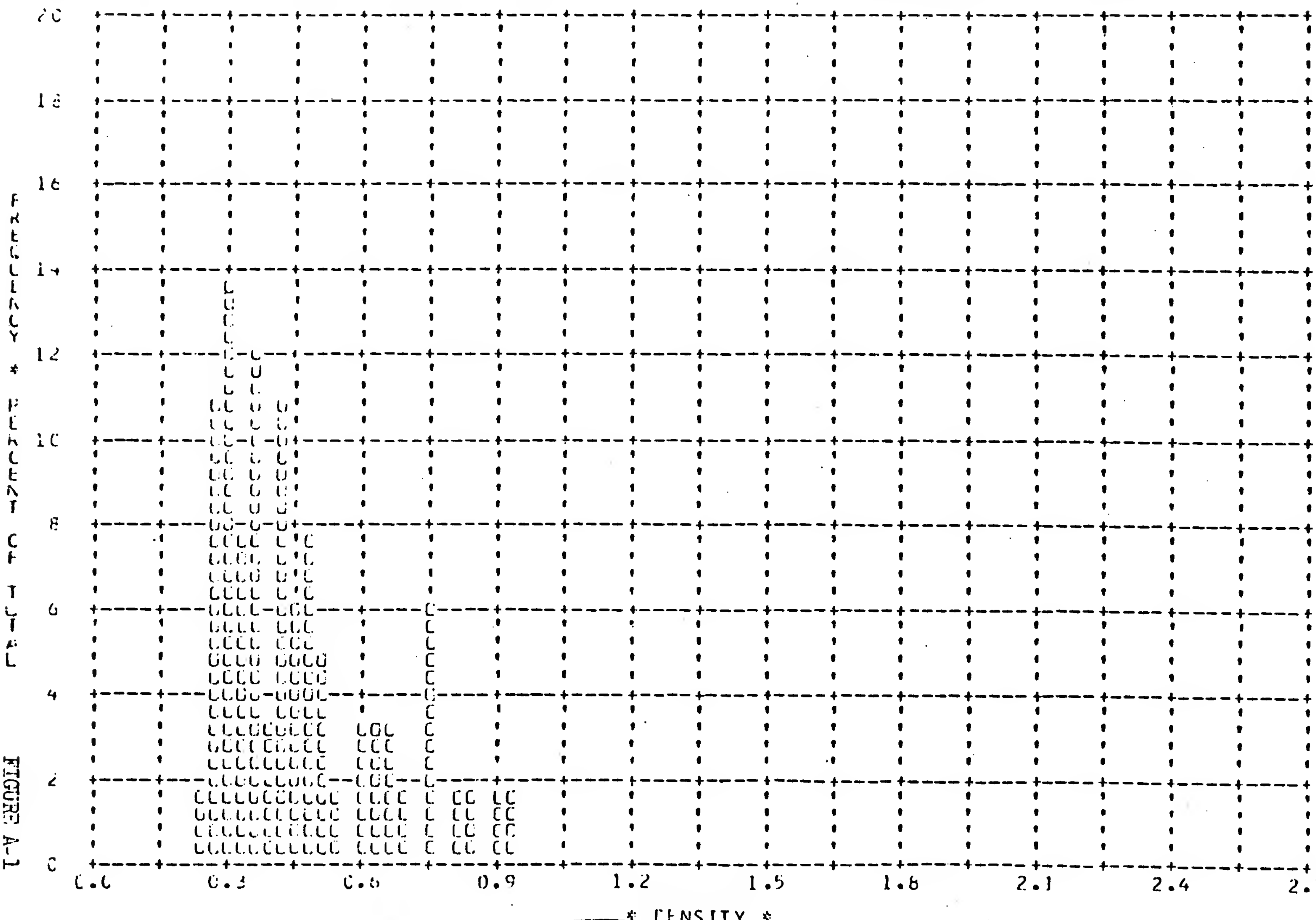


FIGURE A-1

~~TOP SECRET~~ C [redacted]

~~TOP SECRET C~~[redacted]

MISSION * 1044-1 * INSTR * FWD * 1/16/68 PLOT OF D MAX * TERRAIN * PROCESSING * DUAL GAMMA

ARITH MEAN * 1.30 * MEDIAN * 1.41 * STD DEV * 0.37 * RANGE * 0.49 TO 1.82 WITH 67 SAMPLES

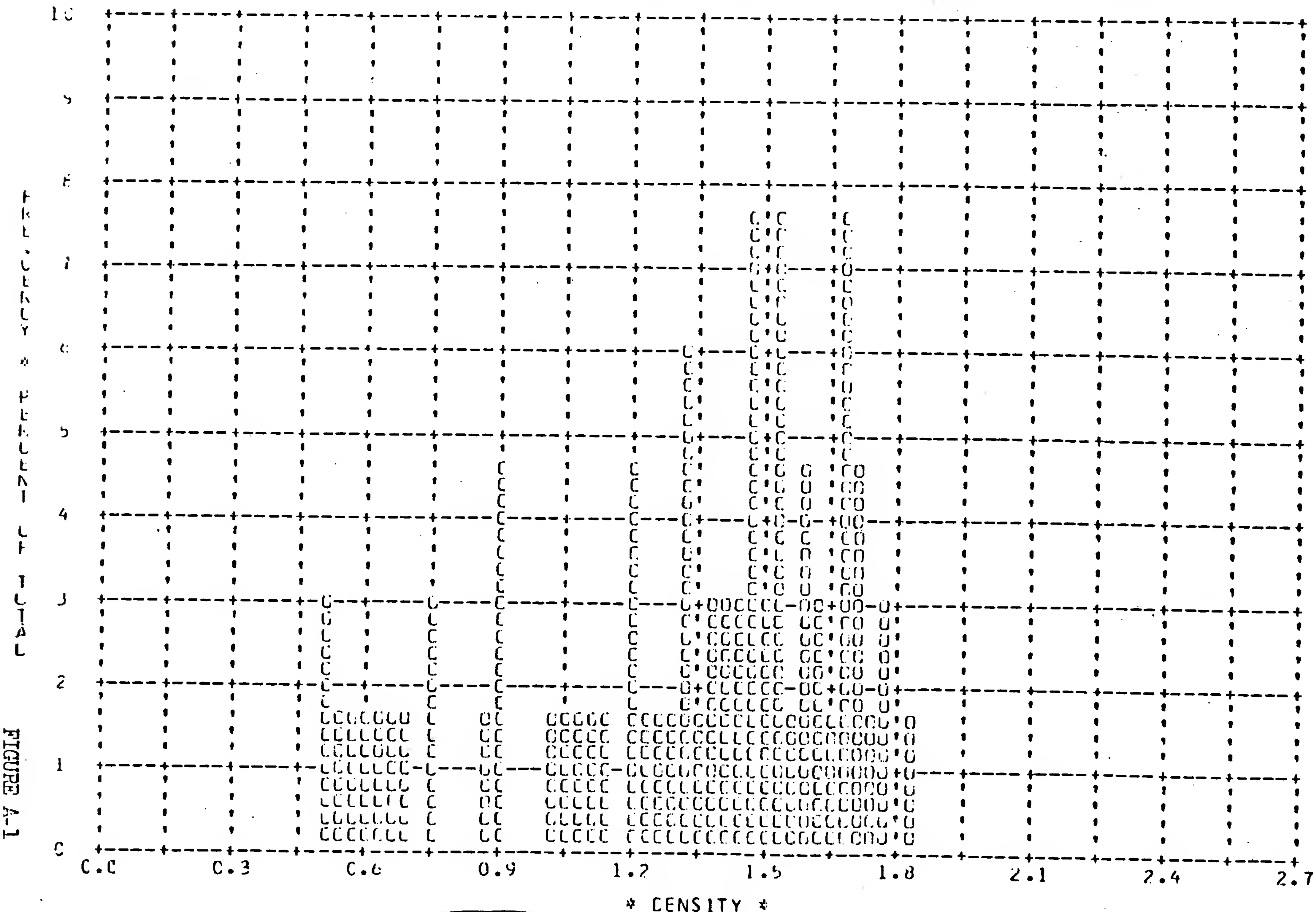


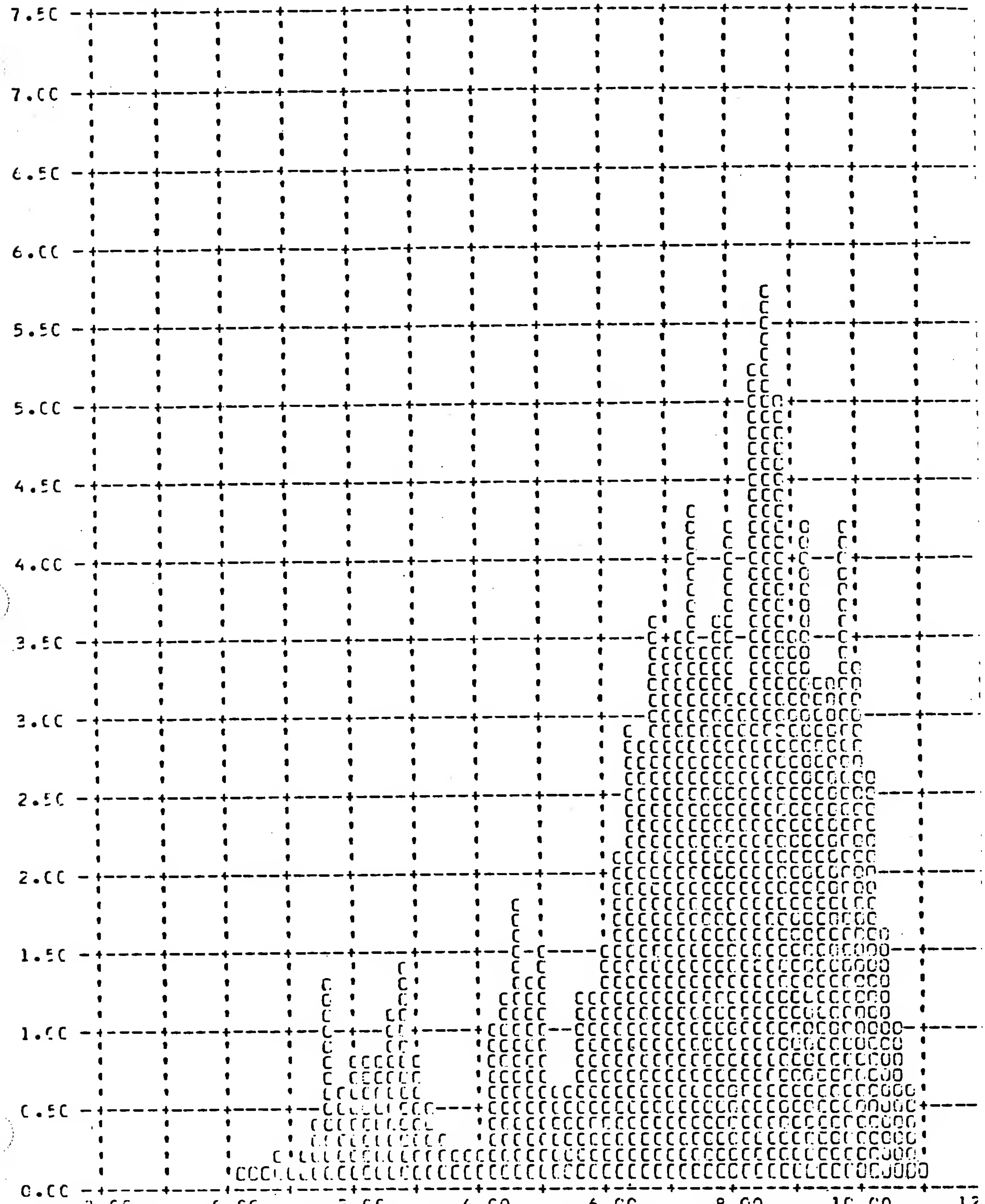
FIGURE A-1

~~TOP SECRET~~ C[redacted]

MISSION 1044A1 ~~TOP SECRET~~ C [redacted] - CONTROL NO. [redacted]

FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 9.

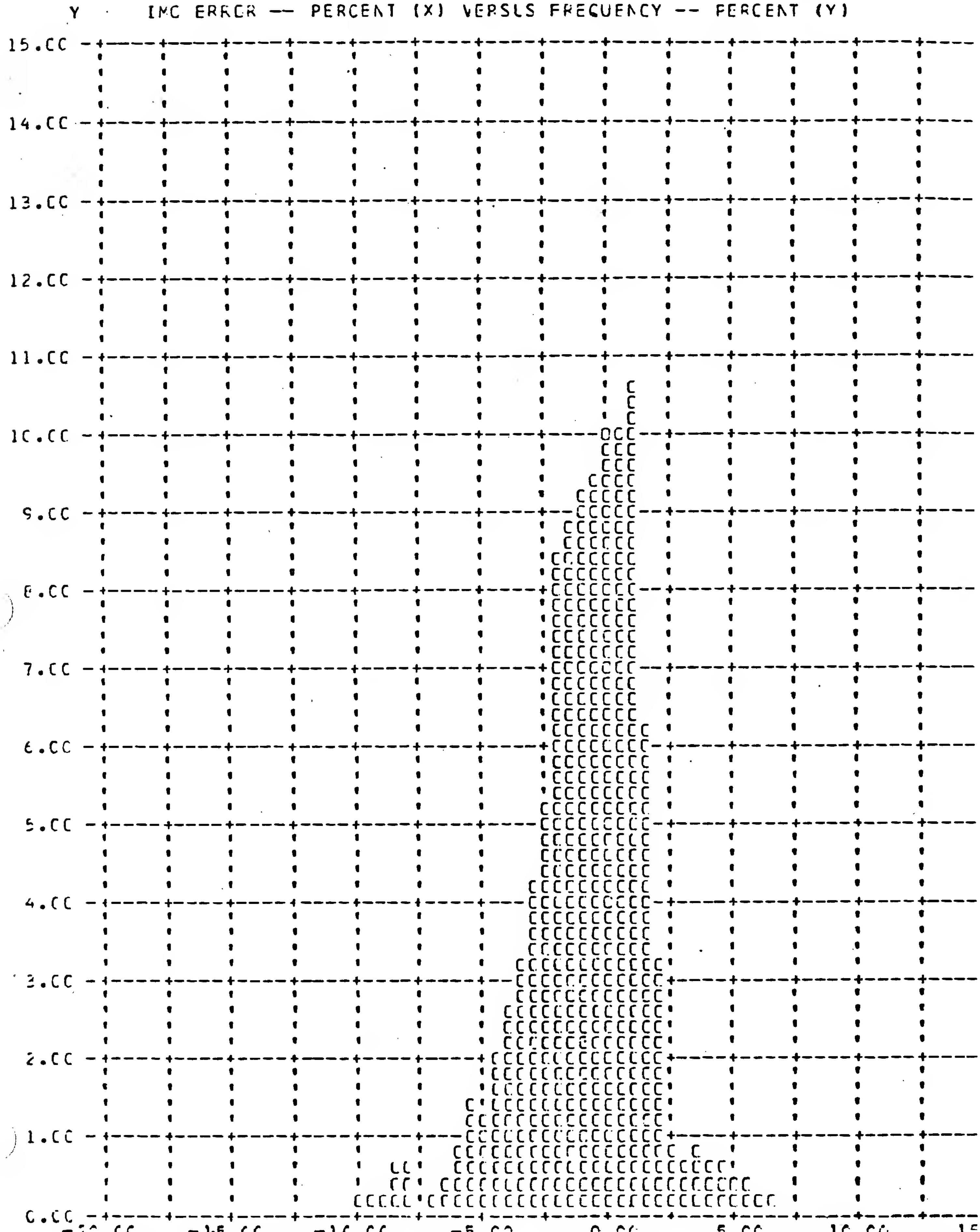
Y CROSS TRACK RESOLUTION LIMIT - FEET (X) VERSUS FREQUENCY - PERCENT (Y)



MISSION 1044A1 ~~TOP SECRET~~ C [redacted] - CONTROL NO. [redacted]

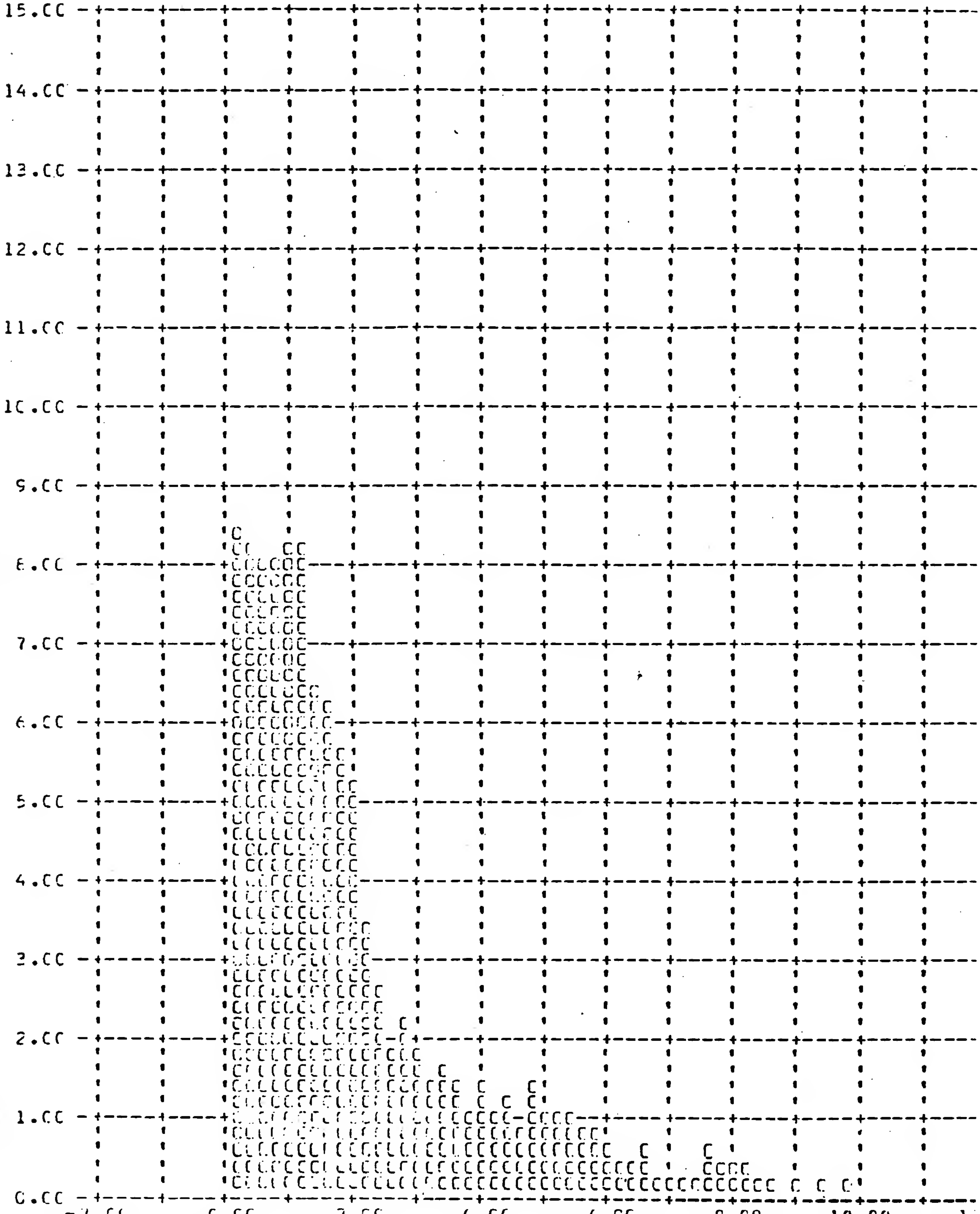
Figure _

FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 4.



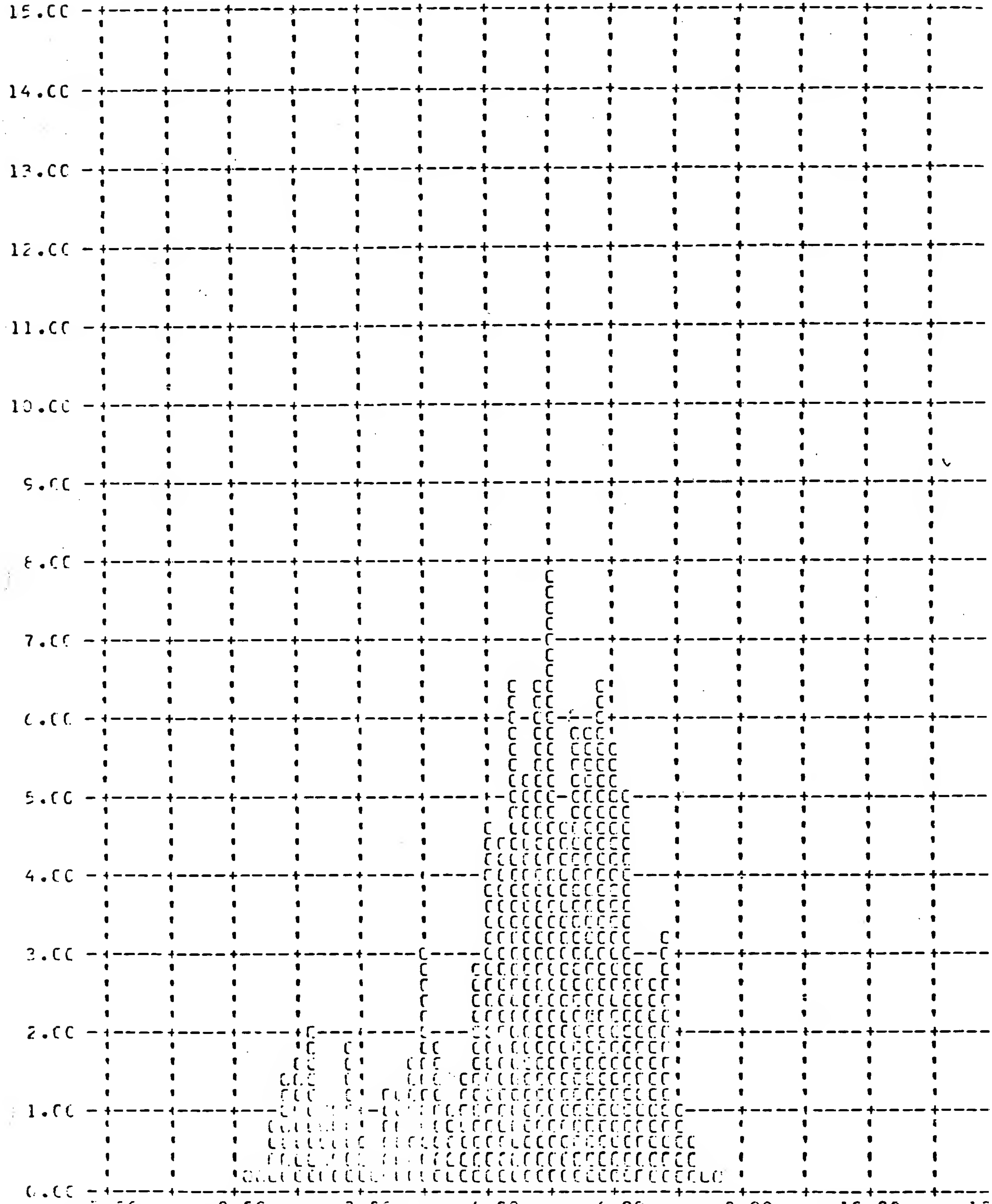
FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 4.

Y ALONG TRACK RESOLUTION LIMIT - FEET (X) VERSUS FREQUENCY - PERCENT (



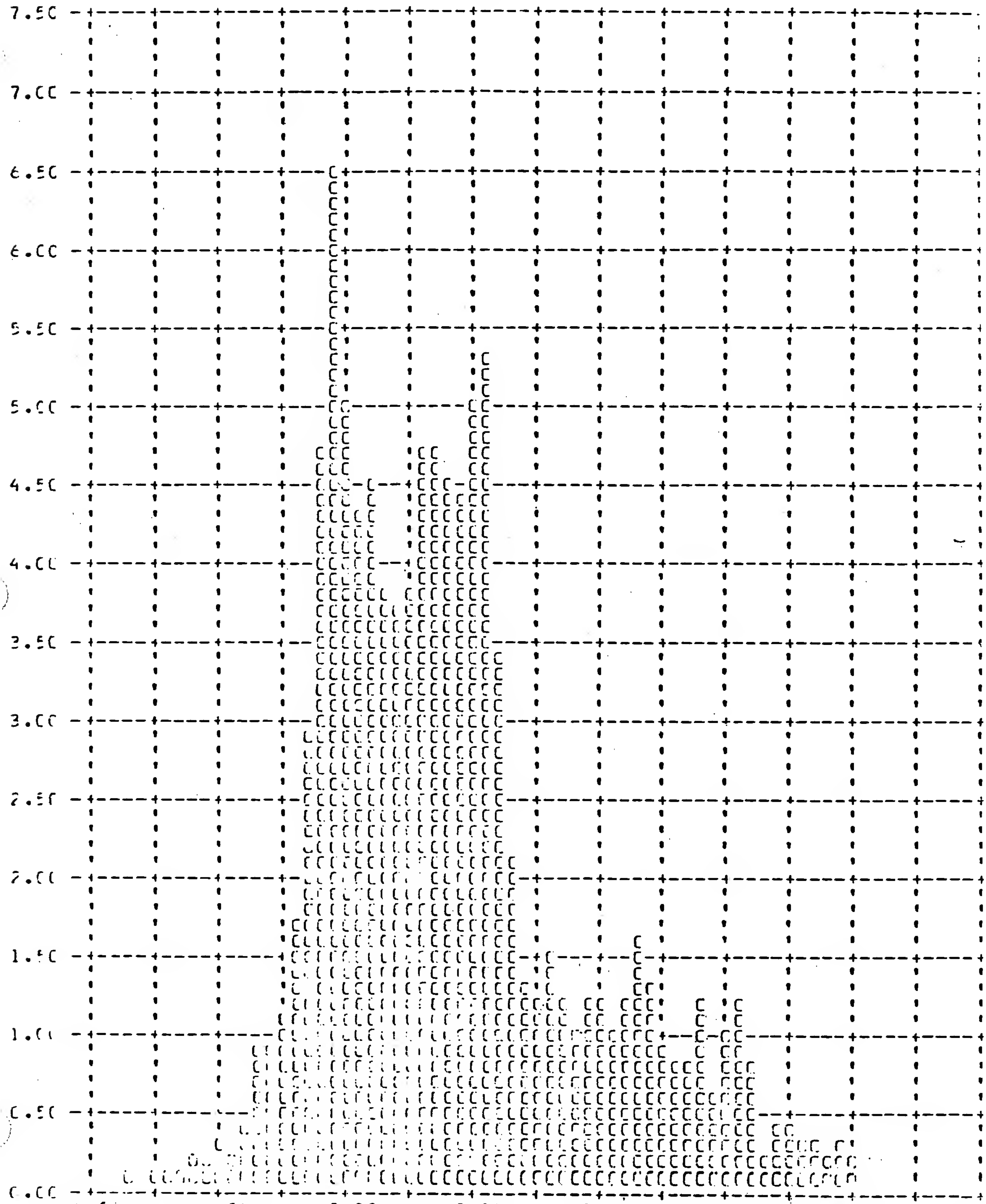
FRAMES 1-5 OF EACH OP OMITTED 90 PERCENT = 6.

Y CROSS TRACK RESOLUTION LIMIT - FEET (X) VERSUS FREQUENCY - PERCENT (



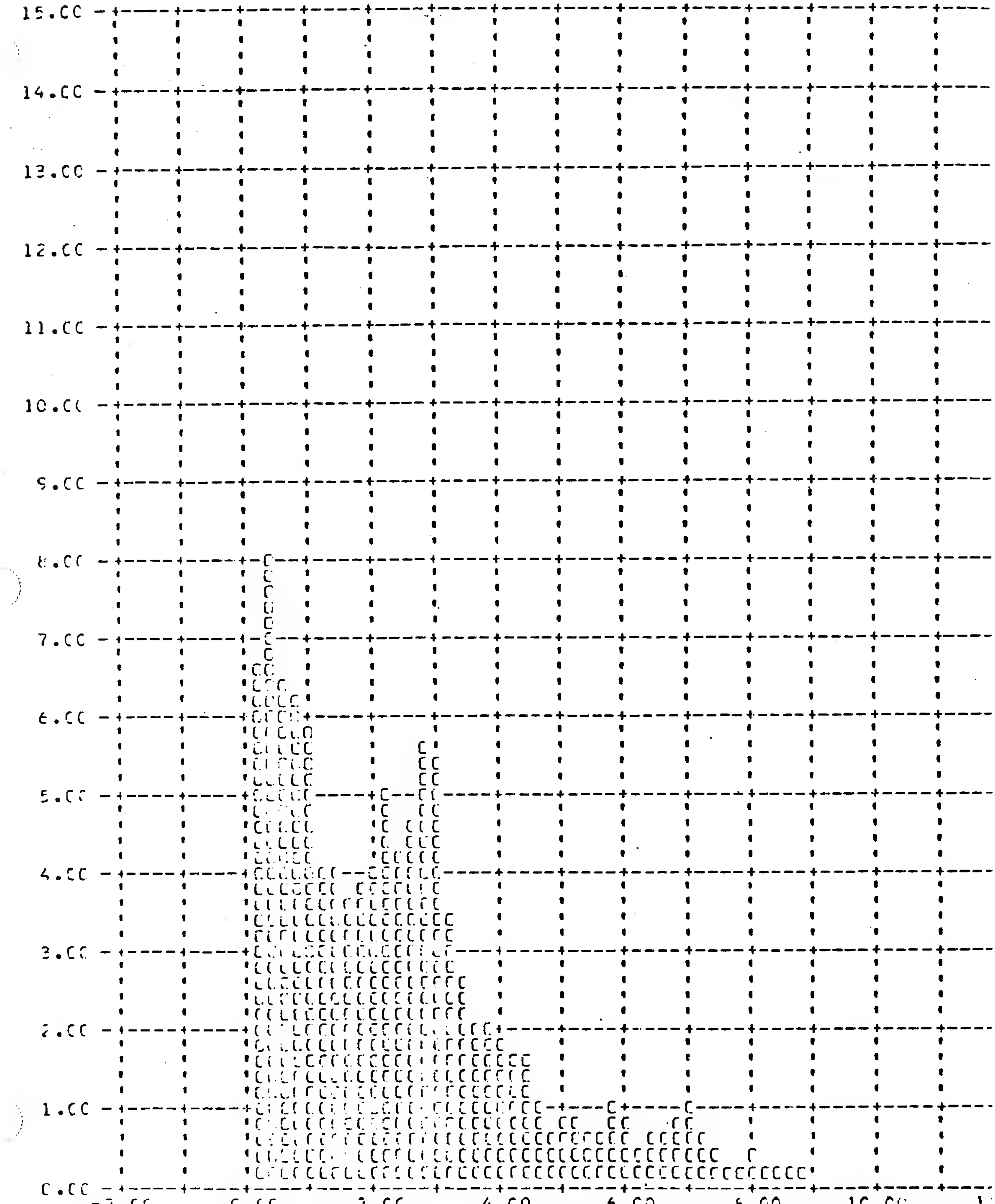
FRAMES 1-6 OF EACH OP OMITTED   90 PERCENT = ...

Y   IMC ERROR -- PERCENT (X) VERSUS FREQUENCY -- PERCENT (Y)



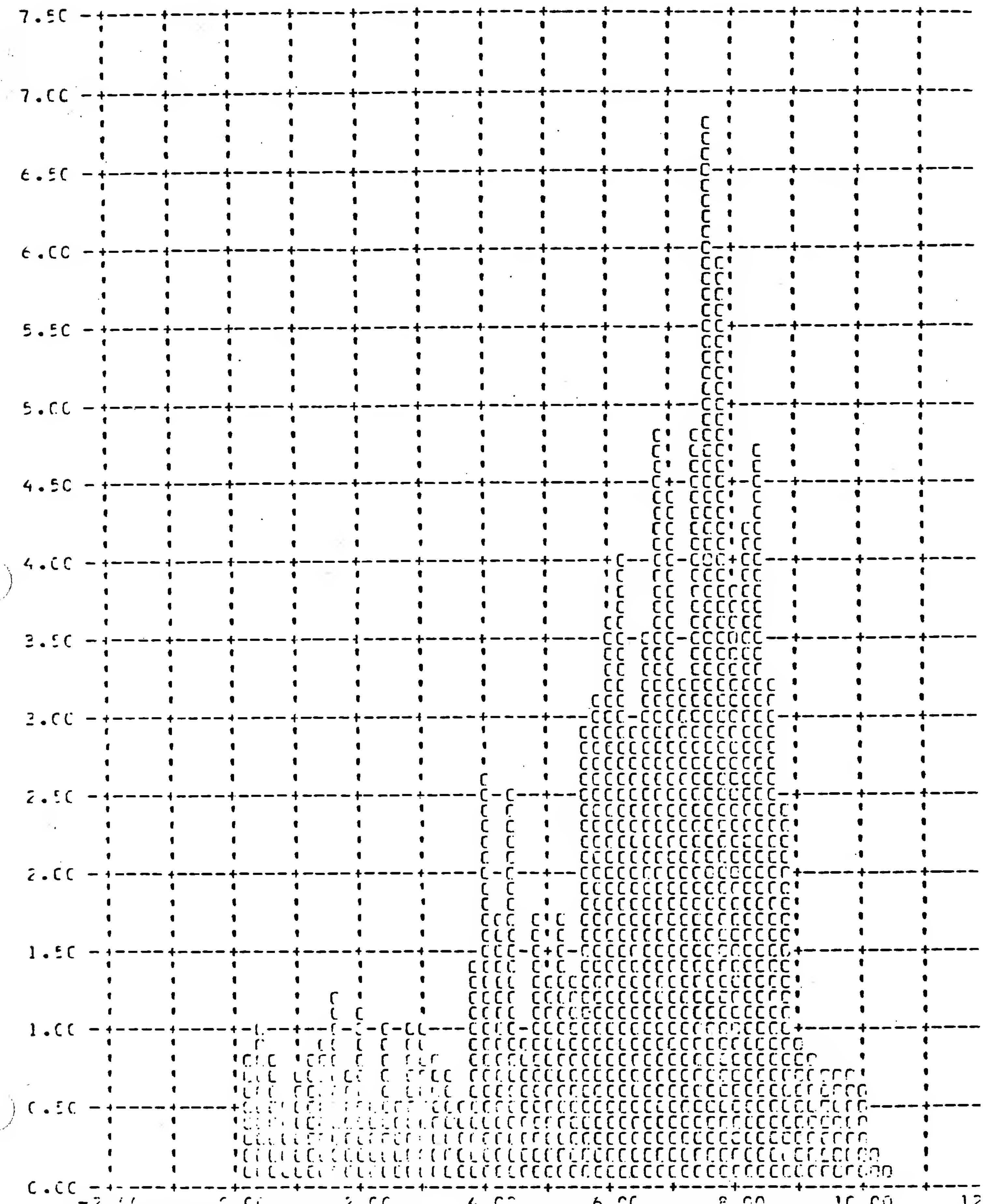
FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 4.

Y ALONG TRACK RESOLUTION LIMIT - FEET (X) VERSUS FREQUENCY - PERCENT (



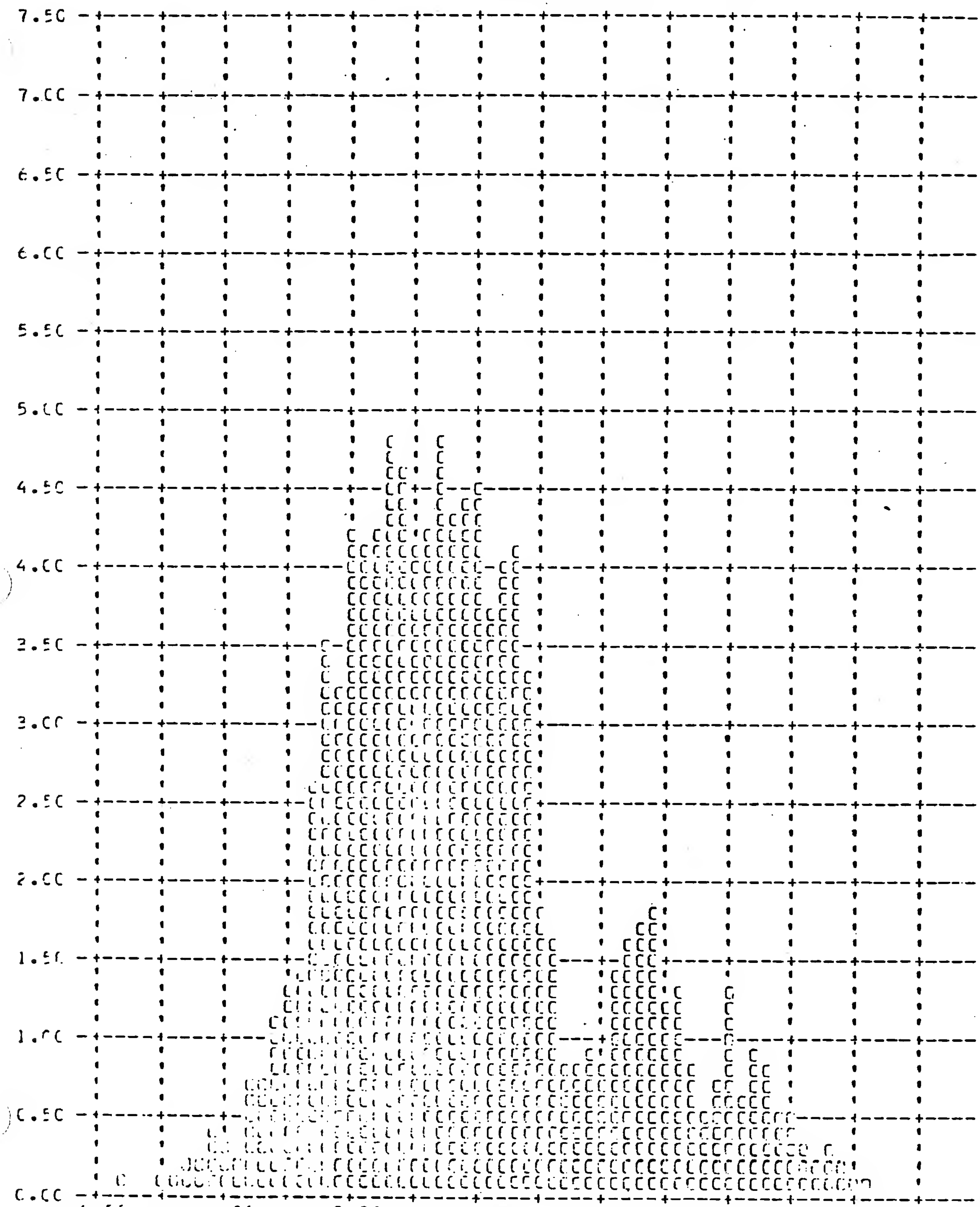
FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 8.

Y CROSS TRACK RESOLUTION LIMIT - FEET (X) VERSUS FREQUENCY - PERCENT (



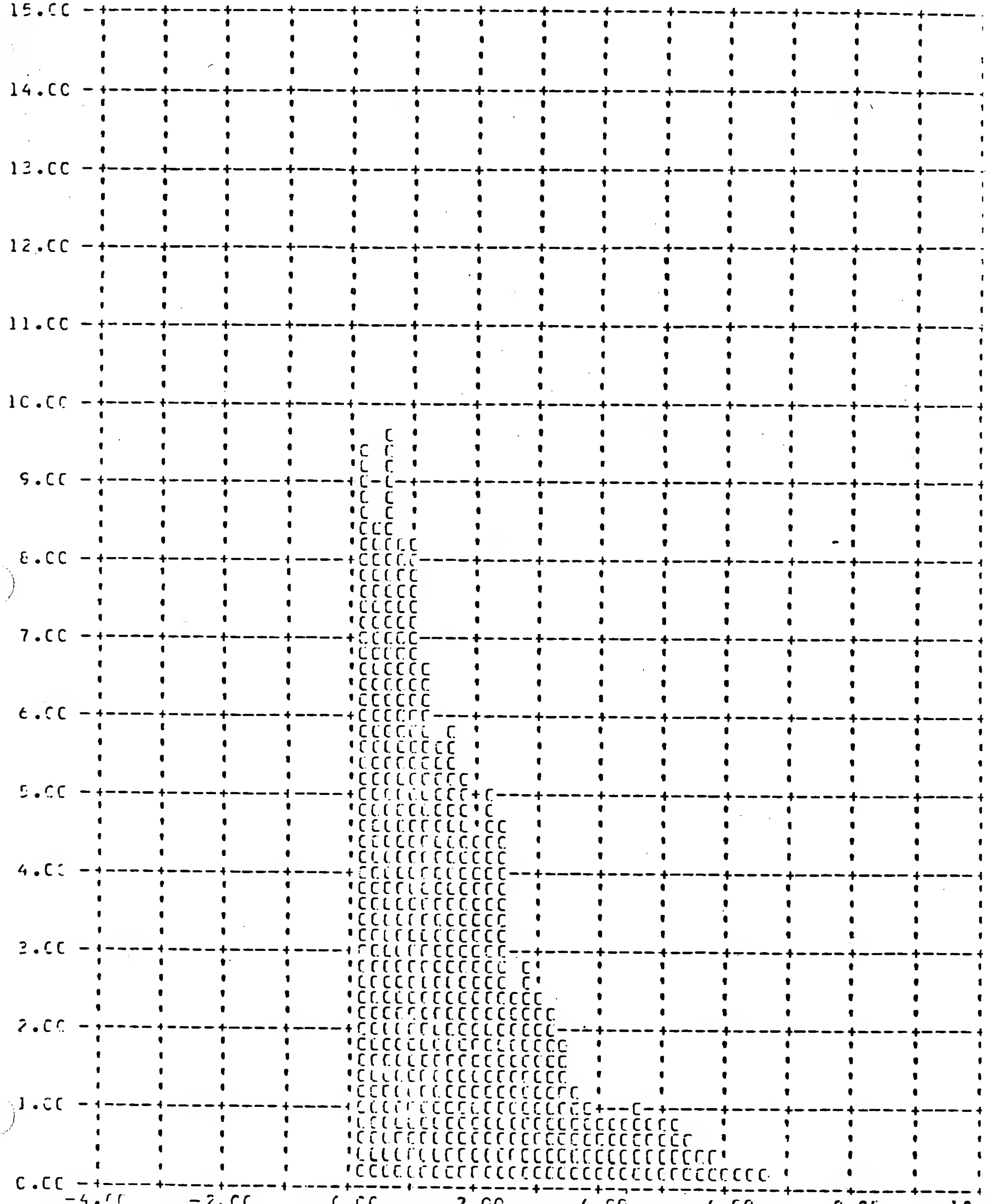
FRAMES 1-5 OF EACH OF OMITTED 90 PERCENT = 3.2

Y INC ERROR -- PERCENT (X) VERSUS FREQUENCY -- PERCENT (Y)



FRAMES 1-6 OF EACH OP OMITTED   90 PERCENT = ...

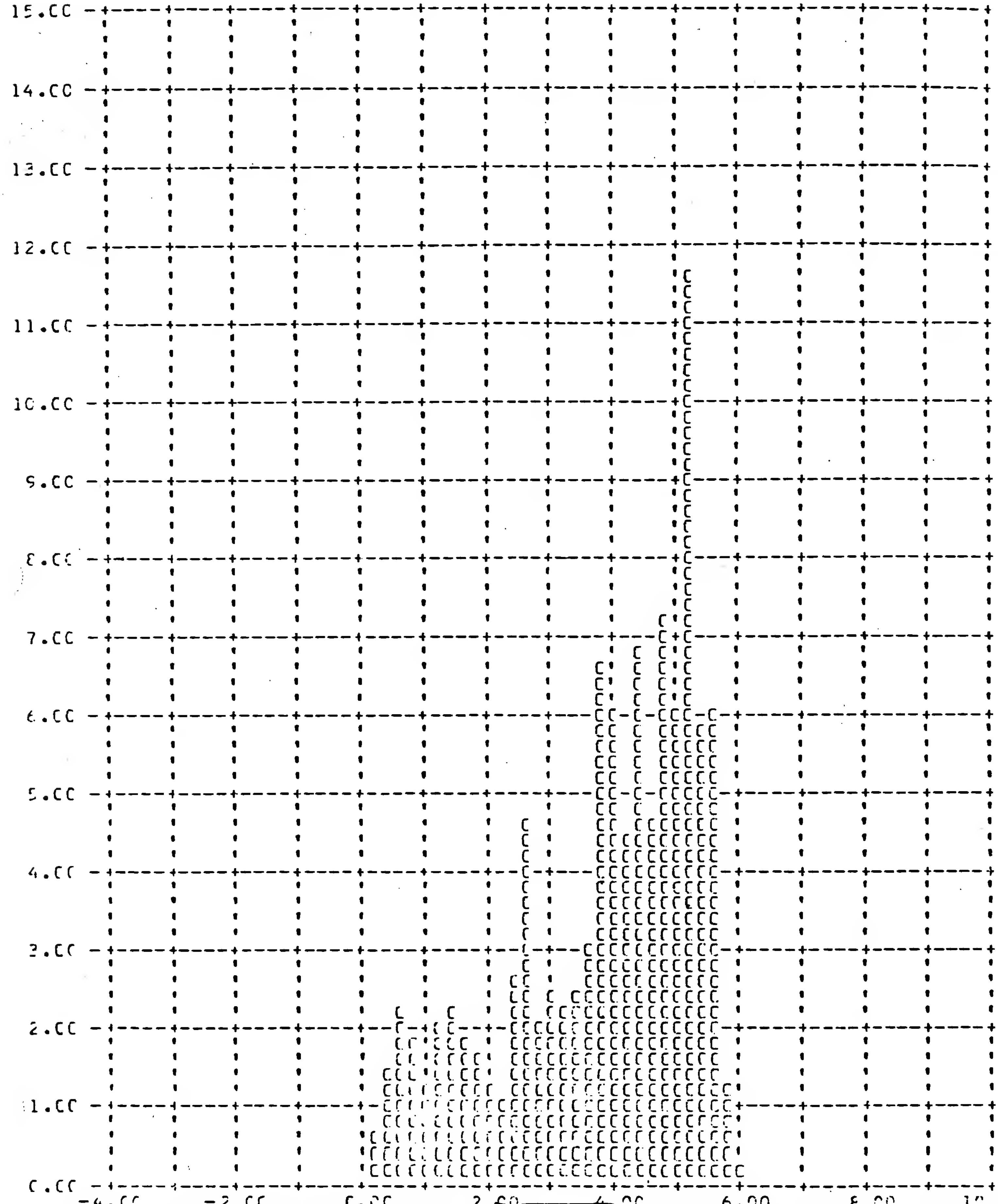
Y   ALONG TRACK RESOLUTION LIMIT - FEET (X) VERSUS FREQUENCY - PERCENT (



Figu[redacted]-11

FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 5.5

Y CROSS TRACK RESOLUTION LIMIT - FEET (X) VERSUS FREQUENCY - PERCENT (Y



SECTION 9

SYSTEM RELIABILITY

Reliability calculations for the payload are based on a sample beginning with M-7. Hence both the major part of the Mural program and the "J" program are covered in the calculation. For certain auxiliaries, i.e., the stellar-index camera and the horizon cameras, the sample size is changed to recognize incorporation of modified equipment or new designs where reliability was one of the principal reasons for the modification. However, for primary mission function, the sample size is consistent with reliability reporting for the vehicle.

The reliability estimates of this section deal exclusively with the payload. Failures to achieve orbit or vehicle induced failures are thereby excluded. Recoveries before a complete mission has been completed are considered as full missions providing that early termination was caused by reasons not connected with payload operation. Film quality is not considered in the reliability estimate calculation. Hence, only electrical and mechanical functioning are considered.

The reliability estimate is also divided into primary and secondary functions. The primary functions are operation of the panoramic cameras, main camera door operation, operation of the payload clock, and recovery operations. The secondary mission functions are horizon camera operation excluding catastrophic open shutter failure mode, auxiliary data recording, and stellar-index camera operation. A summary of estimated reliability is shown in Table 9-1.

Panoramic Camera Reliability

Sample Size - 195 opportunities to operate.

Two failures - S/I Programmer on System J-19

Film Transport on System J-42

Assume - 3000 cycles per camera per mission.

Estimated Reliability = 98.6 at 50% confidence level

Main Camera Door Reliability

Sample Size - 62 vehicles x 3 doors = 124 opportunities to operate

Estimated Reliability = 99.5 at 50% confidence level.

Payload Command and Control

Sample Size - 11,424 hours operation in sample

Two failures

Estimated Reliability = 96.1% at 50% confidence level

Payload Clock Reliability

Sample Size - 11,424 hours operation in sample

No failures

Estimated Reliability - 99.0% at 50% confidence level

Estimated Reliability of Payload Functioning on orbit = 96.5% at 50% confidence level

Recovery System Reliability

89 opportunities to recover

1 failure - improper separation due to water seal - cutter failure

Estimated Reliability - 98.2% at 50% confidence level

Stellar-Index Camera Reliability

Sample begins with J5 (Does not include DISIC units in 1100 series systems)

Sample size = 28,480 cycles

Four failures

Estimated Reliability = 93.3% at 50% confidence level.

Horizon Camera Reliability

Sample begins with J5 - 115,000

Estimated Reliability of Single Camera - 99.1% at 50% confidence level

Estimated Reliability of Four Horizon Cameras at a Parallel Redundant System = 99.9% at 50% confidence level.

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ESTIMATED RELIABILITY SUMMARY

(AT 50% CONFIDENCE LEVEL)

MISSION NUMBER	PRIMARY FUNCTIONS																SECONDARY FUNCTIONS					
	PANORAMIC CAMERA			PANORAMIC CAMERA DOORS			COMMAND & CONTROL SYSTEM			PAYLOAD CLOCK			ON-ORBIT FUNCTIONS	RECOVERY SYSTEM			STELLAR - INDEX CAMERAS			HORIZON CAMERAS		
	SAMPLE (OPERATIONS)	FAILURES	RELIABILITY	SAMPLE	FAILURES	RELIABILITY	SAMPLE (HOURS)	FAILURES	RELIABILITY	SAMPLE (HOURS)	FAILURES	RELIABILITY	RELIABILITY	SAMPLE (CAPSULES)	FAILURES	RELIABILITY	SAMPLE (CYCLES)	FAILURES	RELIABILITY	SAMPLE (CYCLES)	FAILURES	RELIABILITY
9038 TO 1008	60	1	97.3	52	0	98.6	3124	0	98.0	3124	0	98.0	96.1	18	1	90.7	3400	3	63.1	12,000	0	91.7
1009	64	1	97.4	54	0	98.7	3216	0	98.0	3216	0	98.0	96.2	20	1	91.5	4250	3	69.3	15,000	0	93.4
1010	68	1	97.6	56	0	98.8	3432	0	98.1	3432	0	98.1	96.4	22	1	92.5	5100	3	73.7	18,000	0	94.4
1011	72	1	97.7	58	0	98.9	3600	0	98.1	3600	0	98.1	96.8	24	1	93.0	5525	0*	94.7	21,000	0	95.2
1012	76	1	97.8	60	0	98.9	3720	0	98.2	3720	0	98.2	96.9	26	1	93.5	5525	0	94.7	24,000	0	95.8
1013	78	1	97.8	62	0	99.0	3940	1	95.9	3940	0	98.3	96.0	28	1	94.0	5950	0	95.1	25,500	0	96.0
1014	82	1	97.9	64	0	99.0	4056	1	96.1	4056	0	98.3	96.1	30	1	94.4	6375	1	89.6	28,500	0	96.4
1015	86	1	98.0	66	0	99.0	4320	1	96.3	4320	0	98.4	96.1	32	1	94.8	7225	1	90.4	31,500	0	96.7
1016	90	1	98.1	68	0	99.0	4560	1	96.5	4560	0	98.5	96.4	34	1	95.2	7650	1	91.0	34,500	0	97.0
1017	94	0*	99.3	70	0	99.0	4760	1	96.7	4760	0	98.6	97.6	36	1	95.4	8925	1	92.3	37,500	0	97.3
1018	98	1	98.3	72	0	99.1	4920	1	96.8	4920	0	98.7	96.7	38	1	95.6	8900	1	92.3	40,500	0	97.5
1019	102	1	98.4	74	0	99.1	5136	1	96.9	5136	0	98.7	96.8	39	1	95.8	8075**	1	91.5	43,500	0	97.6

* DESIGN FIX NEGATED PREVIOUS FAILURE CONSIDERATIONS

** 1019 SAMPLE OUT OF SEQUENCE

[redacted]

TABLE 9-1

[redacted] [redacted]

ESTIMATED RELIABILITY SUMMARY

(AT 50% CONFIDENCE LEVEL)

MISSION NUMBER	PRIMARY FUNCTIONS: PANORAMIC CAMERA — SAMPLE	FAILURES	RELIABILITY	PANORAMIC CAMERA DOORS — SAMPLE	FAILURES	RELIABILITY	COMMAND & CONTROL SYSTEM — SAMPLE	FAILURES	RELIABILITY	PAYLOAD CLOCK — SAMPLE	FAILURES	RELIABILITY	ON-ORBIT FUNCTIONS — RELIABILITY	RECOVERY SYSTEM — SAMPLE	FAILURES	RELIABILITY	SECONDARY FUNCTIONS: STELLAR-INDEX CAMERAS — SAMPLE	FAILURES	RELIABILITY	HORIZON CAMERAS — SAMPLE	FAILURES	RELIABILITY
1020	108	1	98.5	78	0	99.1	5544	1	97.1	5544	0	98.9	96.9	43	1	96.1	10,680	2	69.9	48,000	0	97.9
1021	104	1	98.5	76	0	99.1	5376	1	97.0	5376	0	98.8	96.9	41	1	96.0	9830	2	89.1	46,500	0	97.8
1022	112	1	98.5	80	0	99.2	5784	1	97.3	5784	0	98.9	96.9	45	1	96.3	11,550	2	90.7	51,000	0	98.0
1023	114	1	98.6	82	0	99.2	6000	2	95.8	6000	0	98.9	96.2	47	1	96.5	12,190	2	91.1	54,000	0	98.1
1024	118	1	98.6	84	0	99.2	6240	2	96.0	6240	0	98.9	96.3	49	1	96.6	13,040	2	91.6	57,000	0	98.2
1025	122	1	98.6	86	0	99.2	6480	2	96.1	6480	0	99.0	96.4	51	1	96.7	13,890	2	92.1	60,000	0	98.3
1026	126	1	98.7	88	0	99.2	6720	2	96.3	6720	0	99.0	96.5	53	1	96.8	14,740	2	92.6	63,000	0	98.4
1027	128	1	98.7	90	0	99.2	6744	2	36.3	6744	0	99.0	96.5	55	1	97.0	15,165	3	90.0	64,500	0	99.4
1028	132	1	98.7	92	0	99.2	6960	2	96.4	6960	0	99.0	96.7	57	1	97.1	16,015	3	30.7	67,500	0	96.5
1029	136	1	98.8	94	0	99.3	7200	2	96.5	7200	0	99.1	96.8	59	1	97.1	16,580	4	88.7	70,500	0	98.5
1030	140	1	98.9	96	0	99.3	7440	2	96.6	7440	0	99.1	96.9	61	1	97.2	17,430	4	89.3	73,500	0	98.6
1031	143	1	98.8	98	0	99.3	7704	2	96.7	7704	0	99.1	96.9	63	1	97.3	18,280	4	89.7	76,500	0	98.6

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ESTIMATED RELIABILITY SUMMARY

(AT 50% CONFIDENCE LEVEL)

MISSION NUMBER	PRIMARY FUNCTIONS: PANORAMIC CAMERA SAMPLE	FAILURES	RELIABILITY	PANORAMIC CAMERA DOORS SAMPLE	FAILURES	RELIABILITY	COMMAND & CONTROL SYSTEM SAMPLE	FAILURES	RELIABILITY	PAYLOAD CLOCK SAMPLE	FAILURES	RELIABILITY	ON-ORBIT FUNCTIONS RELIABILITY	RECOVERY SYSTEM SAMPLE	FAILURES	RELIABILITY	SECONDARY FUNCTIONS: STELLAR-INDEX CAMERAS SAMPLE	FAILURES	RELIABILITY	HORIZON CAMERAS SAMPLE	FAILURES	RELIABILITY
1033	147	1	98.9	100	0	99.3	7968	2	96.8	7968	0	99.2	97.1	65	1	97.4	19,130	4	90.2	79,500	0	98.7
1034	151	1	98.9	102	0	99.3	8208	2	96.9	8208	0	99.2	97.2	67	1	97.5	19,960	4	90.5	82,500	0	98.7
1035	155	1	99.0	[illegible]	0	99.4	[illegible]	2	97.1	[illegible]	0	99.2	97.4	71	1	97.6	21,060	4	[illegible]	88,500	0	98.8
1036	159	1	99.0	104	0	99.3	8520	2	97.0	8520	0	99.2	97.3	69	1	97.6	20,830	4	90.9	85,500	0	98.8
1037	163	1	99.0	106	0	99.4	9043	2	97.2	9048	0	99.3	97.4	73	1	97.7	22,530	4	91.6	91,500	0	98.9
1038	167	1	99.0	110	0	99.4	9336	2	97.3	9336	0	99.3	97.5	75	1	97.8	23,380	4	91.9	94,500	0	98.9
1039	171	1	99.0	112	0	99.4	9600	2	97.4	9600	0	99.3	97.5	77	1	97.8	24,230	4	92.1	97,500	0	98.9
1040	175	1	99.0	114	0	99.4	9840	2	97.4	9840	0	99.3	97.5	79	1	97.9	25,080	4	92.4	100,500	0	99.0
1041	179	1	99.1	116	0	99.4	10,176	2	97.5	10,176	0	99.3	97.6	81	1	97.9	25,930	4	92.6	103,500	0	99.0
1042	183	1	99.1	118	0	99.4	10,536	2	97.6	10,536	0	99.4	97.7	83	1	98.0	26,780	4	92.8	106,500	0	99.0
1043	187	2	98.6	120	0	99.4	10,896	2	97.7	10,896	0	99.4	97.2	85	1	98.0	27,630	4	93.1	109,000	0	99.0

RELIABILITY CRITERIA UPDATED FOR SUBSEQUENT MISSIONS

TABLE 9-1

ESTIMATED RELIABILITY SUMMARY

(AT 50% CONFIDENCE LEVEL)

TABLE 9-1

MISSION NUMBER	PRIMARY FUNCTIONS														SECONDARY FUNCTIONS					
	PANORAMIC CAMERA			PANORAMIC CAMERA DOORS			COMMAND & CONTROL SYSTEM			PAYLOAD CLOCK			ON-ORBIT FUNCTIONS	RECOVERY SYSTEM			STELLAR-INDEX CAMERAS			HORIZON CAMERAS		
	SAMPLE	FAILURES	RELIABILITY	SAMPLE	FAILURES	RELIABILITY	SAMPLE	FAILURES	RELIABILITY	SAMPLE	FAILURES	RELIABILITY	RELIABILITY	SAMPLE	FAILURES	RELIABILITY	SAMPLE	FAILURES	RELIABILITY	SAMPLE	FAILURES	RELIABILITY
1101	[illegible]	2	98.0	128	0	99.4	11,200	2	** 96.1	11,200	0	** 98.5	** 96.5	67	1	95.1	12,965	0	* 77.2	112,000	0	[illegible]
1044	155	2	93.0	124	0	99.5	11,424	2	96.1	11,424	0	99.0	96.5	69	1	98.2	26,400	[illegible]	93.3	116,000	0	[illegible]

** CALCULATIONS ADJUSTED TO NOMINAL 14-DAY MISSION STANDARD

[redacted] * DISIC REPLACES S/I CAMERAS ON 1100 SERIES SYSTEMS

SECTION 10

SUMMARY DATA

The comparison of the operating parameters and the performance achieved by previous missions has been difficult due to the large volume of data that results from each mission. Some of the pertinent characteristics from prior missions have been summarized in Tables 10-1 through 10-3.

The summary data was started with Mission 1004 as the J-05 camera system was the first to incorporate the major modifications of the titanium drum and scan arm, four roller scan head and Corona J capabilities. Only those missions that culminated in the recovery of some photography have been listed, therefore Missions 1003, 1005 and 1032 are deleted.

MISSION SUMMARY

MISSION NUMBER	PAYLOAD NUMBER	VEHICLE NUMBER	LAUNCH DATE	LAUNCH TIME	ORBIT INCLINATION (°)	PERIGEE ALTITUDE (NM)	PERIGEE LOCATION (°N)	RECOVERY PASS	MASTER CAMERA CAMERA NUMBER	MASTER CAMERA SLIT (")	MASTER CAMERA FILTER TYPE	SLAVE CAMERA CAMERA NUMBER	SLAVE CAMERA SLIT (")	SLAVE CAMERA FILTER TYPE	STELLAR-INDEX CAMERA NUMBER
1004	J-05	1174	2/15/64	2138 Z	74 9	99.9	29.0	49 / 112	124	0.250	W-21	125	0.250	W-21	029/29/29 / 042/42/37
1006	J-09	1176	6/4/64	2259 Z	79 9	84.0	63 2	65 / 128	148	0 200	W-21	149	0.200	W-21	045/47/45 / 049/53/42
1007	J-07	1609	6/19/64	2318 Z	85.0	99.2	41.5	65 / 128	144	0 250	W-25	145	0.200	W-21	043/43/43 / 054/56/51
1008	J-10	1177	7/10/64	2314 Z	85 0	99 4	40.8	49 / 112	150	0 200	W-21	151	0.200	W-21	048/45/40 / 033/28/33
1009	J-12	1605	8/5/64	2316 Z	80 1	99.6	39.5	49 / 128	154	0.200	W-21	155	0.200	W-21	056/54/56 / 038/30/34
1010	J-11	1178	9/14/64	2254 Z	84 9	97.4	42.5	65 / 144	152	0 175	W-21	153	0.175	W-21	041/41/41 / 044/46/44
1011	J-3X	1170	10/5/64	2150 Z	79.9	99.3	20.9	65 / —	160	0.175	W-21	161	0.175	W-21	030/30/30 / 057/57/57
1012	J-13	1179	10/17/64	2202 Z	75.0	96.2	32.4	49 / 81	156	0.200	W-21	157	0.200	W-21	051/51/47 / 046/52/53
1013	J-15	1173	11/2/64	2130 Z	80.0	100.0	25.0	65 / 81	158	0.225	W-21	159	0 225	W-21	052/49/55 / 047/48/54
1014	J-16	1180	11/8/64	2030 Z	70.0	103.2	65.6	31 / 145	162	0.250	W-25	139	0.175	W-21	053/59/49 / 050/44/46
1015	J-17	1607	12/19/64	2110 Z	74.9	96.7	21.5	81 / 175	138	0.250	W-25	141	0.175	W-21	061/61/61 / 058/58/58
1016	J-18	1608	1/15/65	2101 Z	74.9	99.4	30.2	81 / 159	132	0.250	W-25	133	0.175	W-21	055/55/50 / 059/50/59
1017	J-14	1611	2/25/65	2144 Z	75.0	97.2	25.9	81 / 145	140	0.250	W-25	165	0.175	W-21	021/21/21 / 060/81/1
1018	J-19	1612	3/25/65	2111 Z	96.0	100.2	40.3	66 / 99	122	0.250	W-25	123	0.175	W-21	020/20/20 / 022/22/22
1019	J-04	1614	4/29/65	2144 Z	85.0	99.1	27.1	80 / —	118	0.250	W-25	119	0.175	W-21	039/39/35 / 019/18/19
1020	J-20	1613	6/9/65	2158 Z	75.1	97.1	40.6	97 / 113	136	0.250	W-25	137	0.175	W-21	067/85/80 / 062/65/65
1021	J-21	1615	5/18/65	1803 Z	75.0	109.2	24.3	81 / 161	166	0.175	W-21	167	0.250	W-25	063/69/69 / 025/27/25
1022	J-22	1617	7/19/65	2201 Z	85.0	99.7	30.3	65 / 144	168	0.250	W-25	169	0.175	W-21	065/77/70 / 024/24/24
1023	J-23	1618	8/17/65	2100 Z	70.0	97.8	29.0	81 / 144	170	0 225	W-25	171	0 150	W-21	017/19/62 / 066/75/72
1024	J-24	1619	9/22/65	2131 Z	80.0	95.9	18.4	81 / 161	172	0 225	W-25	173	0.150	W-21	069/72/84 / 064/82/66
1025	JX-28	1616	10/5/65	1746 Z	75.0	112.9	44.3	81 / 161	142	0.175	W-21	127	0.175	W-21	073/79/88 / 070/89/81
1026	J-25	1620	10/28/65	2117 Z	75.0	93.0	17.0	81 / 160	174	0.225	W-25	175	0.150	W-21	075/92/93 / 072/89/85
1027	JX-27	1621	12/9/65	2110 Z	80.0	97.4	17.3	17 / 33	184	0.250	W-25	163	0.175	W-21	071/87/87 / 068/74/83
1028	J-26	1610	12/24/65	2106 Z	80.0	97.6	28.4	81 / 144	176	0.250	W-25	177	0.175	W-21	077/91/97 / 074/76/95

REC/JOM 4/65

MISSION SUMMARY

TABLE 10-1

Mission Number	Payload Number	Vehicle Number	Launch Date	Launch Time	Orbit Inclination (°)	Perigee Altitude (nm)	Perigee Location (°N)	Recovery Pass	Master Camera: Camera Number	Master Camera: Slit (")	Master Camera: Filter Type	Slave Camera: Camera Number	Slave Camera: Slit (")	Slave Camera: Filter Type	Stellar-Index Camera Number
[illegible]	J-27	1623	2/2/66	2132 Z	75.[illegible]	90.5	22.5	81/160	178	0.275	W-25	179	0.175	W-21	079/94/91 / 076/70/94
[illegible]	J-29	1622	3/9/66	2202 Z	75.0	97.5	18.7	81/159	182	0.275	W-25	183	0.175	W-21	094/100/107 / 082/95/102
[illegible]	J-30	1627	4/7/66	2202 Z	75.1	104.5	23.3	113/177	184	0.225	W-23A	185	0.150	W-21	083/101/89 / 036/100/37
[illegible]	J-28	1625	5/3/66	[illegible] Z	—	—	—	— / —	180	0.150	W-21	181	0.150	W-21	081/97/101 / 080/73/100
[illegible]	J-33	1640	5/24/66	0213 Z	[illegible]	102.0	60.7	82/176	194	0.200	W-21	195	0.200	W-21	091/105/109 / 034/102/75
[illegible]	J-31	1626	6/21/66	2131 Z	80.1	105.4	18.2	81/161	186	0.200	W-23A	187	0.150	W-21	085/109/76 / 057/107/105
[illegible]	[illegible]	[illegible]	[illegible]/66	[illegible] Z	[illegible]	[illegible]	29.1	81/160	[illegible]	0.225	W-23A	189	0.175	W-21	[illegible]
[illegible]	J-32	[illegible]	[illegible]/66	[illegible] Z	[illegible]	102.4	22.5	115/212	193	0.200	W-23A	191	0.150	W-21	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]/66	[illegible] Z	100.0	[illegible]	[illegible]	[illegible]/197	[illegible]	0.225	W-23A	199	0.175	W-21	[illegible]
[illegible]	[illegible]	1629	[illegible]/67	[illegible] Z	80.1	96.9	29.2	81/193	192	0.225	W-23A	193	0.175	W-21	[illegible]
[illegible]	J-35	1635	2/22/67	[illegible] Z	80.0	97.0	30.2	81/177	206	0.225	W-23A	207	0.175	W-21	[illegible]
[illegible]	J-35	[illegible]	3/30/67	1854 Z	85.1	99.7	26.3	81/145	196	0.175	W-21	197	0.225	W-23A	[illegible]
1041	J-40	1634	5/9/67	2152 Z	85.1	100.1	33.5	93/215	208	0.225	W-23A	209	0.175	W-21	[illegible]
1042	J-37	1633	6/16/67	2135 Z	80.0	96.5	29.1	97/240	204	0.200	W-23A	205	0.150	W-21	097/120/117 / 098/121/[illegible]
1043	J-42	1637	8/7/67	2144 Z	80.0	102.1	16.3	113/240	200	0.200	W-23A	201	0.150	W-21	[illegible] / [illegible]
1101	CR-1	1641	9/15/67	1341 Z	80.0	84.6	5.7	97/208	302	*	W-21/W-23A	303	*	W-23A/W-25	DISIC NO 3
1044	J-41	1639	11/2/67	2131 Z	81.5	93.9	16.4	97/144	202	0.225	W-23A	203	0.175	W-21	099/122/120 / [illegible]

* 300 SERIES INSTRUMENTS USE VARIABLE SLIT EXPOSURE CONTROL. REFER TO FINAL REPORT, SECTION 2

[redacted]

PERFORMANCE SUMMARY

MISSION NUMBER	CAMERA	SERIAL NUMBER	M I P VALUE	VISUAL RES	AERIAL MTF/AIM SLIT (µ)	AVERAGE	SLIT (µ)	AVERAGE	[redacted] SLIT (µ)	AVERAGE ALL	AVERAGE HIGH	90% ATTITUDE ERROR (°) PITCH	ROLL	YAW	90% ATTITUDE RATES (°/HR) PITCH	ROLL	YAW	90% V/H ERROR (%)	90% RESOLUTION LIMIT (FEET) ALONG TRACK	CROSS TRACK
1004-1 1004-2	FWD AFT FWD AFT	124 125	85 85	78 66 76 73	350	97 60 88 93	43	109 96 113 106	320	115 117 82 89	127 124 90 95	0.45 0.74	0.42 0.50	1.08 0.91	30.0 44.0	25.0 30.0	21.0 29.0	5.1 4.9	7.7 6.8	6.1 6.5
1006-1 1006-2	FWD AFT FWD AFT	148 149	90 90	73 74 35 85	350	65 71 64 72	43	88 90 81 90	320	84 87 84 87	97 92 90 94	0.41 0.49	0.42 0.40	1.14 1.08	26.8 31.1	28.5 27.9	27.8 30.0	15.4 11.6	13.8 10.1	6.7 7.0
1007-1 1007-2	FWD AFT FWD AFT	144 145	85 85	80 86 79 81	350	60 63 72 77	43	87 83 81 92	320	82 97 68 74	91 110 74 81	0.58 0.64	0.46 0.47	1.43 —	37.6 43.0	23.9 25.8	29.9 —	3.6 4.6 3.2 4.2	3.1 2.1 2.4 1.8	9.4 7.6 — —
1008-1 1008-2	FWD AFT FWD AFT	150 151	85 85	80 76 82 79	350	80 73 84 91	43	95 89 96 83	320	31 86 83 85	89 95 92 91	0.53 0.63	0.39 0.36	0.94 0.71	43.8 42.9	23.9 24.0	29.6 32.5	2.9 2.8	4.9 4.2	5.9 5.4
1009-1 1009-2	FWD AFT FWD AFT	154 155	85 85	92 89 94 87	350	80 85 85 87	—	—	80	75 75 76 72	88 83 84 79	0.65 0.48	0.65 0.65	0.71 0.59	29.2 33.6	22.7 23.9	27.6 27.2	3.3 2.6	5.3 4.9	5.8 5.9
1010-1 1010-2	FWD AFT FWD AFT	152 153	85 85	90 88 92 90	350	90 86 81 62	80	83 80 82 85	80	87 92 82 87	96 103 93 96	0.93 0.59	0.50 0.70	0.87 1.21	39.1 45.4	23.6 23.6	30.8 30.7	4.5 4.6	2.3 7.5	4.4 3.8
1011-1	FWD AFT	160 161	90	84 84	350	76 77	80	36 96	80	78 83	87 93	0.77	0.39	0.97	43.1	28.9	31.1	2.3	5.3	5.6
1012-1 1012-2	FWD AFT FWD AFT	156 157	85 85	92 91 91 89	—	—	80	91 87 89 96	80	84 89 84 85	98 100 91 98	0.65 0.97	0.51 0.77	— 0.51	47.1 45.2	33.2 30.7	— 20.4	1.5 5.9	4.8 3.3	— 5.9
1013-1	FWD AFT	158 159	85	89 77	—	—	60	94 97	80	85 81	99 103	0.64 0.64	0.32 0.32	1.34 1.34	36.9 36.9	29.0 29.0	32.3 32.3	3.7 4.5	7.8 9.6	8.3 8.2
1014-1 1014-2	FWD AFT FWD AFT	162 139	80 80	87 83 83 86	—	—	80	78 80 75 84	80	74 95 70 80	86 107 77 88	0.62 0.62 1.06 1.06	0.41 0.41 0.55 0.59	1.46 1.44 — —	35.0 34.8 38.4 38.1	36.1 36.0 36.4 36.0	38.5 38.3 — —	2.2 3.3 1.4 3.2	6.2 2.8 6.4 2.2	3.8 6.3 — —
1015-1 1015-2	FWD AFT FWD AFT	138 141	85 85	87 87 83 82	—	—	80	76 73 72 72	80	90 97 89 90	—	0.65 0.64 0.50 0.50	0.38 0.39 0.61 0.61	0.53 0.53 0.64 0.64	47.0 46.9 39.1 39.1	29.4 29.2 27.1 27.0	38.2 39.2 36.2 36.3	5.0 6.3 3.2 3.3	5.5 3.4 6.8 4.6	7.8 5.5 7.5 5.3
1016-1 1016-2	FWD AFT FWD AFT	132 133	85 85	85 83 90 91	—	—	80	56 61 55 56	80	81 94 92 91	—	0.72 0.72 0.83 0.83	0.83 0.83 0.93 0.93	2.01 2.01 2.19 2.19	48.9 48.4 42.2 42.2	30.2 30.1 27.2 27.3	40.4 40.4 39.9 39.9	2.0 2.8 1.5 2.3	5.5 3.4 4.9 3.3	10.5 7.4 8.0 7.1
1017-1 1017-2	FWD AFT FWD AFT	140 165	85 85	72 75 85 85	—	—	80	57 70 65 69	80	78 94 80 86	86 107 94 101	0.49 0.49 0.69 0.69	0.76 0.76 0.45 0.45	2.50 2.49 — —	35.5 35.3 36.5 36.3	32.2 32.0 34.0 33.8	38.4 38.5 — —	3.3 4.3 1.8 2.3	9.8 8.3 6.2 5.3	11.6 8.1 — —
1018-1 1018-2	FWD AFT FWD AFT	122 123	85 85	79 77 84 88	—	—	80	70 74 75 71	80	82 96 77 91	92 109 89 103	0.91 0.90 0.84 0.85	0.48 0.47 0.63 0.63	— — — —	47.4 40.2 34.7 34.8	36.7 36.2 30.7 30.7	— — — —	3.4 3.2 3.1 2.8	5.6 3.7 5.6 4.1	— — — —

REC/JOM
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PERFORMANCE SUMMARY

~~TOP SECRET~~ C [redacted]

MISSION	CAMERA	[illegible]	[illegible]	VISUAL [illegible]	[illegible] (W)	[illegible]	[illegible] (W)	AVERAGE	[illegible]	[redacted] [illegible]	[illegible]	ATTITUDE [illegible] PITCH	ROLL	YAW	ATTITUDE RATES [illegible] PITCH	ROLL	YAW	90% V/H ERROR (%)	[illegible] ALONG TRACK	CROSS TRACK
1019-1	FWD	116	85	61	—	—	60	75	80	[illegible]	104	0.42	0.35	0.97	31.6	34.7	33.0	3.3	9.2	5.1
	AFT	115		59				65		67	151	0.44	0.37	0.96	31.6	34.9	33.1	3.6	5.0	6.5
1020-1	FWD	136	80	60	—	—	80	69	60	76	60	0.46	0.35	0.73	27.4	31.8	26.7	5.4	5.9	6.4
	AFT			65				62		94	165	0.46	0.35	0.73	27.4	31.8	26.7	5.3	4.2	5.5
1020-2	FWD	137	—	—				—		—	—	0.41	0.17	1.06	42.6	23.8	42.5	3.5	6.4	7.0
	AFT			—				—		—	—	0.41	0.17	1.06	42.6	23.8	42.5	3.4	4.5	2.9
1021-1	FWD	166	85	68	—	—	60	77	80	66	90	0.55	0.37	0.81	34.9	32.6	26.2	2.7	8.8	8.0
	AFT			50				50		98	105	0.55	0.33	0.51	34.8	32.0	26.3	5.4	5.6	5.5
1021-2	FWD	167	85	65				74		80	112	0.59	0.65	—	44.7	50.6	—	3.1	9.2	—
	AFT			74				62		—	—	—	—	—	—	—	—	—	—	—
1022-1	FWD	165	85	60	—	—	60	66	80	76	91	0.47	0.51	0.85	28.5	27.1	23.6	3.5	9.8	8.6
	AFT			71				53		101	11.	0.47	0.51	0.55	27.9	26.6	23.6	3.0	6.2	6.1
1022-2	FWD	169	85	90				66		74	94	0.40	0.51	0.50	29.4	27.3	31.0	2.6	8.0	8.4
	AFT			92				92		99	110	0.40	0.51	0.50	29.4	27.3	31.1	1.8	4.9	5.9
1023-1	FWD	170	85	—	—	—	60	94	60	57	110	0.49	0.33	0.55	33.0	23.7	23.5	3.4	4.0	6.4
	AFT							87		83	101	0.47	0.33	0.55	32.9	26.7	23.5	3.5	2.7	4.3
1023-2	FWD	171	85					71		76	87	0.42	0.36	0.55	29.7	21.0	23.6	2.4	3.6	6.3
	AFT							80		68	75	0.43	0.37	0.53	29.6	21.3	23.6	2.5	2.7	4.2
1024-1	FWD	172	85	—	—	—	60	79	80	90	102	0.42	0.25	0.62	32.2	24.9	30.5	2.6	5.9	6.8
	AFT							95		94	105	0.42	0.25	0.62	32.2	24.9	30.4	2.1	3.5	4.5
1024-2	FWD	173	85					66		83	101	0.36	0.31	0.93	30.4	24.5	30.4	5.5	4.7	5.4
	AFT							95		100	[illegible]	0.26	0.31	0.93	30.6	23.6	30.4	5.1	3.3	3.6
1025-1	FWD	162	85	—	—	—	60	87	80	80	97	0.50	0.41	0.55	28.1	26.7	25.9	2.0	3.5	6.7
	AFT							97		101	114	0.51	0.42	0.85	26.6	25.7	25.7	3.2	2.8	6.6
1025-2	FWD	127	85					85		96	107	0.52	0.44	0.62	26.0	26.1	29.0	1.7	4.7	6.5
	AFT							91		89	103	0.52	0.44	0.82	26.1	26.0	29.0	1.6	6.7	6.9
1026-1	FWD	174	85	—	—	—	80	76	80	80	92	0.65	0.24	0.70	37.9	33.2	28.5	6.1	13.5	6.2
	AFT							88		98	113	0.65	0.24	0.70	37.5	33.2	28.5	6.1	9.1	4.1
1026-2	FWD	175	85					85		92	104	0.59	0.56	0.87	41.1	46.5	30.8	6.1	5.5	6.7
	AFT							93		90	103	0.59	0.65	0.88	43.3	50.0	27.7	6.7	3.3	3.5
1027-1	FWD	164	85	—	—	—	80	69	60	80	—	0.51	0.37	0.74	47.2	25.5	26.4	4.7	10.5	7.2
	AFT	163						70		92		0.51	0.37	0.74	47.3	25.2	26.2	3.6	4.0	5.2
1028-1	FWD	176	85	—	—	—	80	61	80	89	—	0.52	0.37	0.50	36.6	28.0	30.5	3.9	4.0	8.0
	AFT							92		93		0.52	0.37	0.50	36.6	28.0	30.5	3.1	4.0	5.6
1028-2	FWD	177	85					88		87		0.76	0.52	—	42.7	25.7	—	3.2	4.2	—
	AFT							77		84		0.76	0.52	—	42.5	25.6	—	2.9	3.3	—
						IN-CAM		[illegible]												
1029-1	FWD	178	85	—	80	69	60	91	60	77	—	0.67	0.34	0.77	29.1	31.3	34.4	2.9	7.6	7.4
	AFT					91		95		73		0.68	0.33	0.77	28.5	30.8	34.6	4.6	3.5	4.6
1029-2	FWD	179	85			83		82		77		0.64	0.48	0.44	38.6	32.5	25.7	2.3	7.5	7.5
	AFT					91		94		81		0.65	0.48	0.44	37.5	32.1	25.7	3.6	2.9	4.9
1030-1	FWD	182	85	—	80	95	80	76	80	66	—	0.67	0.25	0.85	29.6	22.7	36.1	3.9	6.9	8.6
	AFT					74		79		77		0.67	0.25	0.89	29.6	22.8	35.9	5.4	5.1	5.6
1030-2	FWD	183	85			77		81		71		0.70	0.27	0.67	28.4	21.7	36.3	4.9	11.2	9.6
	AFT					91		74		71		0.70	0.26	0.67	28.2	21.9	36.3	5.0	6.6	5.5
1031-1	FWD	184	85	—	80	65	80	76	80	60	—	0.50	0.47	0.96	16.2	17.3	26.6	6.1	13.8	6.4
	AFT					57		71		66		0.54	0.41	0.91	18.1	18.7	22.6	6.0	12.0	5.6
1031-2	FWD	185	85			91		94		74		0.57	0.20	0.75	19.0	19.3	15.7	5.4	10.3	4.9
	AFT					—		—		—		—	—	—	—	—	—	—	—	—
1033-1	FWD	194	85	—	60	77	80	94	60	67	—	0.11	0.33	0.60	11.3	34.9	27.3	3.5	5.2	6.2
	AFT					67		93		72		0.15	0.27	0.39	8.2	55.6	18.6	4.9	6.1	5.6
1033-2	FWD	195	85			75		90		96		0.21	0.24	1.09	22.3	49.3	17.5	2.6	5.8	6.9
	AFT					93		92		73		0.20	0.24	1.06	22.3	50.7	17.4	2.9	7.5	6.7

~~TOP SECRET~~ C [redacted]

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PERFORMANCE SUMMARY

[illegible] NUMBER	CAMERA	[illegible] NUMBER	[illegible] VALUE	[illegible]			[illegible] ATTITUDE ERROR (°)			90% ATTITUDE RATES ([illegible])			90% V/h ERROR (%)	90% RESOLUTION LIMIT (FEET)		IMC TRACK
				AVERAGE	[illegible]	[illegible]	PITCH	ROLL	YAW	PITCH	ROLL	YAW		ALONG TRACK	CROSS TRACK	
1034-1	FWD	166	60	75	60	91	0.20	0 [illegible]	0.99	19.3	20.4	24.9	15.0	17.6	5.6	—
	AFT			93		90	0.20	0.19	0.99	19.3	20.4	24.9	15.2	13.5	4.5	—
1034-2	FWD		60	74		59	0.34	0.36	0.33	21.1	28.9	16.2	8.7	10.4	7.1	—
	AFT	167		69		86	0.34	0.36	0.33	21.1	29.0	16.2	6.9	8.0	5.3	—
1035-1	FWD	[illegible]	65	[illegible]	60	—	0.16	0.53	1.55	18.9	27.9	33.9	4.0	4.8	3.7	4.0
	AFT			[illegible]			0.17	0.54	2.43	[illegible]	23.4	32.2	4.1	3.7	2.4	4.1
1035-2	FWD		65	81			0.16	0.50	3.02	17.4	30.1	27.5	3.2	4.0	3.5	3.2
	AFT	[illegible]		82			0.17	0.51	3.02	19.9	24.7	26.3	3.4	3.3	2.4	3.4
1036-1	FWD	195	65	[illegible]	60	—	0.76	0.96	0.60	31.2	25.6	29.5	3.4	5.1	6.8	—
	AFT			94			0.76	0.96	0.60	31.[illegible]	25.5	29.4	3.3	3.6	5.1	—
1036-2	FWD		65	73			0.94	0.70	0.40	33.0	19.7	23.3	3.3	3.6	6.5	—
	AFT	[illegible]		64			0.94	0.70	0.40	32.9	25.7	23.3	[illegible]	2.7	4.9	—
1037-1	FWD	196	65	[illegible]	60	—	[illegible]	[illegible]	1.50	22.8	40.0	29.3	9.5	10.1	8.0	9.6
	AFT			[illegible]			0.15	[illegible]	1.5[illegible]	25.7	33.9	32.4	10.1	9.0	[illegible]	10.3
1037-2	FWD		65	[illegible]			[illegible]	0.36	1.17	[illegible]	52.5	25.2	6.3	[illegible]	7.6	6.3
	AFT	[illegible]		[illegible]			[illegible]	0.42	1.14	33.5	36.6	53.4	6.6	5.4	5.9	7.0
1038-1	FWD	192	60	[illegible]	60	—	[illegible]	0.25	[illegible]	15.7	33.7	39.9	3.6	4.1	3.7	3.5
	AFT			[illegible]			0.27	0.24	2.95	41.6	27.2	34.4	3.4	3.3	2.5	3.7
1038-2	FWD		60	[illegible]			0.34	0.51	2.97	20.0	46.7	27.8	3.4	3.6	3.3	3.1
	AFT	193		77			[illegible]	[illegible]	2.96	50.4	28.3	27.3	3.4	3.6	2.4	3.9
1039-1	FWD	206	65	65	60	—	0.31	0.43	3.03	19.0	27.8	39.2	5.1	6.2	4.6	5.2
	AFT			7[illegible]			0.20	0.61	3.05	37.5	23.0	28.5	5.2	4.8	5.2	5.2
1039-2	FWD		65	71			0.50	0.54	2.50	33.1	30.2	25.0	4.6	5.5	5.4	4.7
	AFT	207		65			0.34	0.53	2.52	27.1	24.2	25.9	4.8	4.6	3.6	5.0
1040-1	FWD	196	85	64	80	—	0.33	0.56	2.99	26.0	22.2	28.4	2.6	3.9	2.1	2.8
	AFT			66			0.20	0.56	3.00	22.1	23.2	28.5	2.1	1.9	2.5	2.1
1040-2	FWD		85	61			0.32	0.49	2.96	27.5	30.0	32.5	1.6	2.2	2.0	1.7
	AFT	197		75			0.29	0.46	2.96	27.2	26.4	28.7	2.7	2.5	2.2	2.6
1041-1	FWD	208	65	72	60	—	0.34	0.16	3.05	14.7	14.0	12.7	5.1	6.4	3.4	5.2
	AFT			82			0.35	0.16	3.05	15.8	13.5	13.0	5.8	5.7	3.0	5.7
1041-2	FWD		65	73			0.26	0.23	2.94	22.9	15.7	18.8	4.9	6.4	2.1	4.9
	AFT	209		78			0.28	0.24	3.01	23.9	16.2	21.0	5.6	5.5	2.0	5.5
1042-1	FWD	204	85	79	80	—	0.31	0.22	2.86	22.1	38.3	27.0	3.1	3.3	1.5	3.1
	AFT			85			0.32	0.24	2.83	23.4	33.0	25.9	3.2	2.7	1.1	3.4
1042-2	FWD		85	70			0.31	0.38	2.39	16.1	46.1	31.4	2.1	2.5	2.2	2.3
	AFT	205		74			0.32	0.37	2.31	19.9	33.6	25.6	2.6	2.3	1.8	2.8
1043-1	FWD	200	85	65	80	—	0.28	0.23	3.11	23.9	22.0	41.5	4.2	5.4	1.5	4.2
	AFT			67			0.31	0.23	3.14	25.4	20.5	34.0	3.3	2.8	0.8	3.3
1043-2	FWD		85	65			0.30	0.34	2.73	29.2	31.6	47.9	4.3	5.3	2.2	4.4
	AFT	201		75			0.34	0.34	2.78	27.3	29.9	45.1	3.1	2.8	0.9	3.2
1101-1	FWD					*					*				*	
	AFT															
1101-2	FWD															
	AFT															
1044-1	FWD	202	85	76	80	—	0.30	0.15	3.42	14.0	26.2	51.3	4.2	7.0	9.6	4.6
	AFT			71			0.30	0.16	3.36	16.1	24.2	42.7	4.1	4.4	6.2	4.[illegible]
1044-2	FWD		85	61			0.37	0.37	3.31	23.0	30.6	29.8	3.0	4.4	6.4	3.2
	AFT	203		84			0.37	0.38	3.27	23.5	24.5	28.8	3.2	3.3	5.5	3.3

* DATA NOT PRESENTLY AVAILABLE

~~TOP SECRET~~ C [redacted]

EXPOSURE - PROCESSING SUMMARY

MISSION NUMBER	CAMERA	SOLAR ELEVATION RANGE (°) LOW	SOLAR ELEVATION RANGE (°) HIGH	SOLAR AZIMUTH RANGE (°) LOW	SOLAR AZIMUTH RANGE (°) HIGH	PREDICTED PROCESSING (%) P	PREDICTED PROCESSING (%) I	PREDICTED PROCESSING (%) F	ELECTED PROCESSING (%) P	ELECTED PROCESSING (%) I	ELECTED PROCESSING (%) F	COMPUTED PROCESSING (%) P	COMPUTED PROCESSING (%) I	COMPUTED PROCESSING (%) F	TERRAIN D-MIN RANGE LOW	TERRAIN D-MIN RANGE HIGH	TERRAIN D-MIN MEAN	TERRAIN D-MIN MEDIAN	TERRAIN D-MAX RANGE LOW	TERRAIN D-MAX RANGE HIGH	TERRAIN D-MAX MEAN	TERRAIN D-MAX MEDIAN	CLOUD D-MAX RANGE LOW	CLOUD D-MAX RANGE HIGH	CLOUD D-MAX MEAN	CLOUD D-MAX MEDIAN	UNDER EXPOSED (%)	UNDER PROCESSED (%)	NOMINAL EXP. & PPC (%)	OVER PROCESSED (%)	OVER EXPOSED (%)	CLOUD COVER (%)
1004-1	FWD	-3	51	25	124	5	76	19	4	79	17	0	79	21	0.26	1.89	0.83	0.78	0.43	2.43	1.97	2.02	1.00	2.43	2.04	2.08	0	4	60	31	5	35
	AFT	-3	51	25	124	5	74	21	4	79	17	0	80	20	0.22	1.56	0.79	0.70	0.92	2.45	1.92	1.94	1.09	2.43	1.99	2.03	1	4	67	26	3	35
1004-2	FWD	-4	69	10	131	7	76	17	37	50	13	4	83	13	0.29	1.80	0.83	0.78	0.36	2.30	1.84	1.90	0.41	2.37	1.87	1.93	0	4	59	27	9	35
	AFT	-4	69	10	131	7	76	17	37	50	13	4	77	19	0.29	1.91	0.61	0.73	0.36	2.30	1.89	1.99	0.43	2.46	1.89	1.98	0	4	67	20	9	35
1006-1	FWD	38	56	52	140	1	99	0	1	51	49	0	51	49	0.23	1.31	0.71	0.68	0.80	2.31	1.58	1.52	1.31	2.40	2.20	2.24	0	5	72	21	1	60
	AFT	38	56	52	140	1	99	0	0	23	77	0	24	76	0.36	1.60	0.87	0.84	0.95	2.35	1.72	1.72	1.14	2.40	2.24	2.28	0	1	50	40	1	60
1006-2	FWD	32	64	35	147	2	98	0	30	41	29	11	59	30	0.21	1.14	0.53	0.50	0.56	2.29	1.49	1.50	1.30	2.33	2.11	2.16	2	21	72	4	0	45
	AFT	32	64	36	147	2	98	0	35	40	25	21	54	25	0.25	1.34	0.62	0.59	0.65	[illegible]	1.48	1.47	1.55	2.50	2.12	2.16	0	11	77	9	3	45
1007-1	FWD	12	49	50	103	0	5	95	1	20	79	0	25	75	0.26	1.22	0.52	0.47	0.62	2.20	1.44	1.40	1.22	1.36	2.17	2.21	20	8	67	5	0	60
	AFT	11	49	43	102	0	100	0	10	42	49	6	77	17	0.26	1.75	0.58	0.55	0.79	2.31	1.52	1.52	1.54	2.39	2.20	2.24	1	13	80	5	1	60
1007-2	FWD	32	57	43	112	0	25	75	3	28	69	0	26	74	0.26	1.23	0.51	0.46	0.70	2.32	1.44	1.40	0.90	2.37	2.15	2.20	18	9	71	2	0	65
	AFT	31	57	38	111	0	100	0	10	41	49	3	88	9	0.24	1.56	0.60	0.56	0.44	2.27	1.50	1.52	0.84	2.41	2.17	2.25	1	16	74	9	1	65
1008-1	FWD	30	51	50	102	0	100	0	4	32	64	1	35	64	0.32	1.48	0.65	0.62	0.78	2.24	1.55	1.54	1.46	2.35	2.21	2.24	2	2	86	8	1	45
	AFT	30	51	50	102	0	100	0	4	27	69	0	34	66	0.32	1.57	0.71	0.69	0.81	2.21	1.57	1.58	1.08	2.37	2.21	2.24	1	1	84	13	0	45
1008-2	FWD	29	56	42	105	0	100	0	3	31	66	0	27	73	0.14	1.81	0.76	0.72	0.57	2.10	1.54	1.55	1.09	2.40	2.20	2.25	2	1	73	23	1	65
	AFT	29	56	42	105	0	100	0	3	30	67	0	29	71	0.32	1.64	0.77	0.76	0.73	2.10	1.55	1.55	1.10	2.35	2.18	2.22	1	3	69	27	0	65
1009-1	FWD	12	49	42	132	0	100	0	1	26	73	0	34	66	0.32	1.40	0.65	0.62	0.85	2.41	1.53	1.52	0.83	2.51	2.30	2.36	5	4	77	14	0	50
	AFT	12	49	42	132	0	100	0	0	40	60	0	45	55	0.28	1.42	0.70	0.64	0.92	2.29	1.58	1.55	0.83	2.51	2.32	2.36	1	5	73	20	0	50
1009-2	FWD	23	59	35	138	2	98	0	3	21	76	0	40	60	0.29	1.55	0.69	0.64	0.73	2.37	1.53	1.53	1.06	2.45	2.25	2.30	4	4	74	17	0	55
	AFT	23	59	35	138	2	99	0	4	47	49	0	56	44	0.26	1.47	0.69	0.64	0.44	2.42	1.61	1.60	1.61	2.50	2.31	2.34	1	4	77	18	0	55
1010-1	FWD	18	47	45	83	0	21	79	0	13	87	0	9	91	0.28	1.14	0.52	0.47	0.43	2.37	1.38	1.32	1.11	2.42	2.16	2.20	18	3	75	4	0	48
	AFT	19	47	45	83	0	21	79	0	19	81	0	16	84	0.27	1.25	0.57	0.52	0.78	2.42	1.45	1.41	0.96	2.46	2.20	2.26	9	4	81	6	0	48
1010-2	FWD	15	52	38	76	0	50	50	0	16	84	0	13	87	0.26	1.51	0.55	0.50	0.52	2.36	1.41	1.38	1.00	2.44	2.14	2.20	22	4	67	6	0	45
	AFT	15	52	38	76	0	50	50	0	23	77	0	25	75	0.20	1.48	0.53	0.56	0.30	2.40	1.47	1.45	1.29	2.48	2.18	2.22	13	3	76	8	0	45
1011-1	FWD	2	55	33	66	0	64	36	2	23	75	2	23	75	0.18	0.93	0.50	0.46	0.56	2.36	1.48	1.43	0.78	2.40	2.07	2.16	17	11	70	2	0	40
	AFT	2	55	33	66	0	67	33	3	47	50	0	37	63	0.24	1.48	0.60	0.56	0.50	2.35	1.57	1.55	0.74	2.37	2.11	2.18	3	7	81	8	0	40
1012-1	FWD	0	45	38	71	0	64	36	7	56	37	0	65	35	0.25	1.30	0.59	0.53	0.54	2.39	1.40	1.42	0.90	2.39	1.93	2.00	6	17	68	10	0	60
	AFT	0	45	38	71	0	64	36	0	33	67	0	49	51	0.26	1.40	0.61	0.58	0.47	2.27	1.44	1.40	0.72	2.32	1.89	1.96	5	10	74	11	0	60
1012-2	FWD	0	57	34	106	0	77	23	6	44	50	0	49	51	0.30	1.20	0.50	0.55	0.73	2.32	1.49	1.42	0.67	2.34	1.91	2.00	4	9	80	7	0	40
	AFT	0	57	34	106	0	77	23	3	15	82	0	10	90	0.30	1.27	0.68	0.62	0.49	2.33	1.55	1.58	0.70	2.38	1.96	2.02	4	0	72	23	0	40
1013-1	FWD	0	56	28	93	0	64	36	0	42	58	0	55	45	0.20	1.66	0.56	0.36	0.52	2.29	1.56	1.59	1.21	2.41	2.03	2.10	7	13	76	4	0	47
	AFT	0	56	26	82	0	64	36	2	7	91	0	33	67	0.28	1.56	0.66	0.48	0.64	2.28	1.59	1.63	1.10	2.36	1.97	2.03	5	5	74	16	0	47
1014-1	FWD	0	59	15	71	0	21	79	1	38	61	0	63	37	0.17	0.99	0.40	0.36	0.26	2.36	1.40	1.42	1.01	2.38	1.94	2.05	27	33	39	1	0	40
	AFT	0	59	14	69	0	31	69	0	13	87	0	36	64	0.18	1.26	0.51	0.48	0.25	2.38	1.42	1.49	0.42	2.43	1.91	2.00	19	12	64	5	0	40
1014-2	FWD	0	77	0	36	0	21	79	0	26	74	0	61	39	0.17	1.06	0.36	0.31	0.23	2.32	1.30	1.36	0.42	2.36	1.72	1.80	31	40	27	2	0	40
	AFT	0	76	0	34	0	29	71	0	5	95	0	68	32	0.18	1.49	0.44	0.40	0.27	2.28	1.34	1.45	0.26	2.44	1.71	1.84	19	29	50	2	0	40
1015-1	FWD	5	68	19	68	0	8	92	2	2	96	0	2	98	0.25	1.70	0.54	0.47	0.54	2.28	1.44	1.46	0.46	2.41	1.86	1.90	28	0	65	7	0	45
	AFT	4	68	18	67	0	30	70	0	5	95	0	4	96	0.29	1.20	0.60	0.56	0.46	2.28	1.49	1.50	0.80	2.36	1.86	1.95	14	0	77	8	0	45
1015-2	FWD	0	80	-2	71	0	10	90	0	10	90	0	11	89	0.22	1.10	0.50	0.46	0.34	2.07	1.29	1.30	0.28	2.34	1.69	1.78	28	4	65	3	0	40
	AFT	0	79	-2	71	0	21	79	0	9	91	0	9	91	0.26	1.21	0.59	0.52	0.36	2.22	1.37	1.38	0.36	2.40	1.74	1.80	17	1	70	12	0	40
1016-1	FWD	5	69	13	76	0	7	93	1	41	58	0	59	41	0.13	1.55	0.51	0.45	0.70	2.43	1.67	1.68	0.85	2.44	1.91	1.90	19	17	56	8	1	45
	AFT	4	69	12	76	0	27	73	0	26	74	0	42	58	0.22	1.65	0.64	0.58	0.62	2.34	1.69	1.72	0.98	2.46	1.90	1.92	11	9	62	17	1	45
1016-2	FWD	1	84	-4	76	0	8	92	0	31	69	0	48	52	0.18	1.56	0.48	0.44	0.29	2.35	1.45	1.44	0.34	2.50	1.76	1.82	22	18	56	3	0	40
	AFT	0	84	-4	76	0	19	81	1	27	72	0	40	60	0.20	1.88	0.55	0.49	0.26	2.32	1.52	1.60	0.30	2.49	1.75	1.82	23	5	65	6	1	40
1017-1	FWD	-11	50	21	99	0	0	100	13	63	24	0	82	18	0.20	1.65	0.66	0.61	0.46	2.23	1.74	1.78	0.60	2.32	1.93	2.00	1	6	77	13	1	25
	AFT	-1	57	19	98	0	17	83	24	58	18	4	90	6	0.20	1.62	0.64	0.50	0.60	2.29	1.75	1.75	1.18	2.36	1.89	1.90	1	13	74	11	2	25
1017-2	FWD	1	78	9	139	0	0	100	5	62	33	7	77	16	0.22	1.22	0.58	0.53	0.37	2.30	1.70	1.80	0.86	2.37	1.93	1.94	3	14	74	9	0	30
	AFT	1	79	7	135	0	7	93	18	62	20	0	89	11	0.20	1.54	0.64	0.62	0.30	2.30	1.62	1.68	0.38	2.34	1.85	1.92	2	13	74	10	1	30
1018-1	FWD	6	77	13	134	0	0	100	9	63	28	1	83	16	0.19	1.46	0.56	0.52	0.64	2.22	1.66	1.73	1.00	2.32	1.96	1.99	2	19	71	7	0	35
	AFT	6	78	10	125	0	22	78	9	53	38	5	72	23	0.18	1.36	0.62	0.58	0.68	2.20	1.68	1.80	1.03	2.28	1.95	2.00	1	12	77	9	2	35
1018-2	FWD	8	77	14	134	0	0	100	18	74	8	17	79	4	0.16	1.78	0.57	0.49	0.50	2.24	1.50	1.54	0.90	2.26	1.65	1.91	1	31	56	9	4	45
	AFT	8	77	10	132	0	15	65	1	50	49	0	74	26	0.22	1.50	0.81	0.79	0.94	2.26	1.70	1.74	1.09	2.35	1.98	2.04	0	5	59	35	2	45

[redacted]

REC/JOM

EXPOSURE-PROCESSING SUMMARY

~~TOP SECRET~~ C/[redacted]

MISSION NUMBER	CAMERA	SOLAR ELEVATION [illegible]		SOLAR AZIMUTH [illegible]		[illegible] PROCESSING (%)			[illegible] PROCESSING (%)			[illegible] PROCESSING (%)			TERRAIN D-MIN				TERRAIN D-MAX				CLOUD D-MAX				UNDER EXPOSED (%)	UNDER PROCESSED (%)	NOMINAL EXP & PROC (%)	OVER PROCESSED (%)	OVER EXPOSED (%)	CLOUD COVER (%)
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	LOW	HIGH	MEAN	MEDIAN	LOW	HIGH	MEAN	MEDIAN	LOW	HIGH	MEAN	MEDIAN						
1019-1	FWD	24	70	24	152	0	21	79	22	32	46	4	56	40	0.26	1.92	0.71	0.61	0.60	2.15	1.45	1.50	0.56	2.26	1.54	2.00	4	7	64	17	7	45
	AFT	23	70	21	152	0	92	8	26	55	19	3	87	10	0.13	1.70	0.66	0.60	0.39	2.26	1.40	1.45	0.80	2.20	1.96	2.02	1	13	70	14	3	45
1020-1	FWD	29	75	19	156	0	19	81	13	48	39	1	56	41	0.25	1.30	0.55	0.52	[illegible]	2.28	1.57	1.54	1.40	2.33	2.10	2.16	1	18	78	4	0	42
	AFT	29	75	17	[illegible]	0	64	36	15	56	29	0	74	26	0.23	1.20	0.55	0.54	0.72	2.20	1.47	1.46	1.22	2.29	2.04	2.10	0	16	76	5	0	42
1020-2	FWD	47	69	15	35	INSUFFICIENT DATA																										
	AFT	4[illegible]	65	17	33																											
1021-1	FWD	15	5[illegible]	-141	-23	0	68	32	14	39	47	1	52	47	0.25	1.90	0.64	0.58	0.74	2.18	1.50	1.50	0.97	2.36	1.92	2.00	5	9	72	11	3	35
	AFT	14	5[illegible]	-147	-29	0	99	1	15	31	47	0	57	43	0.17	1.70	0.65	0.57	0.54	2.24	1.45	1.42	0.85	2.30	1.90	2.00	5	5	75	12	3	35
1021-2	FWD	13	52	[illegible]	-41	0	29	71	13	41	46	0	57	43	0.18	1.52	0.54	0.50	0.63	2.36	1.36	1.35	1.05	2.25	1.82	[illegible]	14	13	66	6	0	20
	AFT	13	52	[illegible]	-41	0	100	0	55	25	20	0	50	50	0.23	1.30	0.76	0.76	0.70	2.30	1.52	1.50	1.30	2.30	1.94	1.96	6	0	71	21	1	20
1022-1	FWD	[illegible]	67	3[illegible]	[illegible]	0	36	64	8	36	[illegible]	0	42	58	0.16	1.49	0.45	0.40	0.54	2.42	1.57	1.60	1.32	2.55	2.24	2.25	30	19	47	3	0	35
	AFT	27	67	2[illegible]	[illegible]	0	89	11	7	42	51	0	53	47	0.24	1.48	0.57	0.50	0.52	2.30	1.63	1.68	1.30	2.47	2.21	2.25	4	15	71	9	1	55
1022-2	FWD	19	74	21	152	0	8	92	1	37	62	0	43	57	0.29	0.99	0.39	0.35	0.62	2.05	1.45	1.45	1.16	2.45	2.23	2.20	35	28	35	1	0	45
	AFT	24	74	19	152	0	100	0	10	44	46	0	53	47	0.21	1.40	0.49	0.44	0.50	2.32	1.51	1.52	1.45	2.49	2.25	2.28	10	25	61	4	0	45
1023-1	FWD	22	82	6	164	0	5	95	15	14	[illegible]	0	72	28	0.15	1.20	0.39	0.35	0.43	2.41	1.22	1.22	0.87	2.41	2.06	2.11	20	44	54	2	0	35
	AFT	20	[illegible]	5	165	0	11	89	0	39	61	0	42	59	0.20	1.40	0.53	0.48	0.41	2.21	1.31	1.37	0.96	2.45	2.15	2.20	13	14	65	7	0	35
1023-2	FWD	29	61	-13	177	0	7	93	0	19	81	0	18	82	0.22	1.38	0.48	0.42	0.41	2.03	1.18	1.22	0.90	2.41	2.03	2.11	35	2	60	2	1	35
	AFT	28	60	-13	179	0	3	97	5	[illegible]	[illegible]	0	28	72	0.22	1.60	0.52	0.48	0.44	2.31	1.24	1.24	1.09	2.46	2.10	2.17	13	10	73	4	0	35
1024-1	FWD	10	51	24	137	0	0	100	0	57	43	0	72	28	0.17	1.74	0.35	0.32	0.40	2.25	1.22	1.15	0.58	2.34	1.97	2.03	27	49	23	0	0	35
	AFT	9	61	21	136	0	0	100	0	28	72	0	82	18	0.20	1.22	0.40	0.37	0.4[illegible]	2.32	1.30	1.24	0.94	2.40	1.97	2.06	13	46	39	2	0	35
1024-2	FWD	9	79	11	151	0	0	100	12	19	69	0	25	75	0.24	1.17	0.46	0.42	0.35	2.40	1.30	1.27	1.01	2.45	1.91	1.99	36	3	58	2	0	35
	AFT	8	79	9	151	0	0	100	1	22	77	0	66	34	0.20	1.39	0.47	0.40	[illegible]	2.36	1.31	1.32	0.20	2.40	1.89	1.95	20	25	50	5	0	35
1025-1	FWD	1	70	-123	-18	0	68	32	10	41	49	0	56	44	0.18	1.42	0.43	0.37	0.23	2.30	1.37	1.39	0.42	2.35	1.81	1.92	33	25	36	4	1	35
	AFT	0	70	-121	-19	0	72	28	8	49	43	0	61	39	0.18	1.69	0.45	0.42	0.26	2.20	1.33	1.38	0.23	2.32	1.75	1.90	25	20	47	7	1	35
1025-2	FWD	0	56	-124	-31	0	71	29	3	42	55	0	56	44	0.18	1.22	0.45	0.39	0.26	2.24	1.32	1.33	0.63	2.29	1.78	1.89	29	21	45	4	0	22
	AFT	0	56	-122	-33	0	73	27	3	45	52	0	51	49	0.21	1.32	0.53	0.48	0.33	2.16	1.31	1.35	0.43	2.23	1.71	1.79	19	12	61	6	0	[illegible]
1026-1	FWD	0	57	23	135	0	4	96	0	21	79	0	24	76	0.20	1.26	0.38	0.33	0.31	2.27	1.22	1.22	0.40	2.28	1.77	1.87	57	13	28	2	0	45
	AFT	0	57	21	135	0	5	95	0	4	96	0	38	62	0.20	1.16	0.39	0.34	0.24	2.36	1.29	1.30	0.37	2.40	1.78	1.86	39	27	33	1	0	45
1026-2	FWD	1	72	8	84	0	0	100	1	5	94	0	5	95	0.19	1.32	0.36	0.30	0.25	2.17	1.05	1.02	0.43	2.24	1.63	1.70	76	2	19	1	0	50
	AFT	0	57	13	70	0	0	100	2	5	93	0	15	85	0.21	1.35	0.39	0.32	0.27	2.20	1.08	1.03	0.30	2.26	1.61	1.70	60	12	25	3	0	[illegible]
1027-1	FWD	3	63	26	110	0	0	100	0	0	100	0	3	97	0.25	1.54	0.52	0.46	0.50	2.38	1.45	1.52	0.71	2.39	2.03	2.10	36	2	58	4	0	50
	AFT	2	63	26	108	0	0	100	0	21	79	0	20	80	0.26	1.34	0.58	0.53	0.54	2.30	1.46	1.46	0.40	2.40	1.96	2.06	12	3	76	7	0	50
1028-1	FWD	3	73	15	135	0	4	96	0	4	96	0	11	89	0.22	1.08	0.37	0.32	0.40	2.32	1.42	1.42	0.62	2.30	1.77	1.83	65	6	28	1	0	30
	AFT	1	73	14	133	0	5	95	0	16	84	0	11	89	0.20	1.01	0.41	0.36	0.30	2.23	1.35	1.40	0.68	2.26	1.72	1.77	56	5	37	1	0	30
1028-2	FWD	2	61	5	49	0	3	97	1	9	90	0	15	85	0.23	0.93	0.40	0.35	0.37	2.20	1.36	1.38	0.30	2.33	1.72	1.77	59	3	37	1	0	20
	AFT	1	80	5	43	0	10	90	0	6	94	0	6	94	0.22	1.40	0.50	0.40	0.28	2.21	1.40	1.43	0.30	2.35	1.69	1.75	47	1	44	7	1	30
1029-1	FWD	3	63	18	130	0	8	92	1	16	83	0	14	86	0.25	1.80	0.64	0.54	0.50	2.30	1.72	1.76	0.48	2.39	2.03	2.08	20	0	62	14	3	35
	AFT	2	62	16	128	0	20	80	0	21	79	0	25	75	0.16	1.73	0.57	0.48	0.20	2.32	1.62	1.65	0.36	2.40	1.91	1.95	24	5	59	10	1	35
1029-2	FWD	0	80	4	146	0	4	95	2	28	70	0	20	80	0.22	1.68	0.54	0.45	0.31	2.35	1.52	1.59	0.45	2.40	1.88	2.00	33	5	50	11	2	25
	AFT	0	80	3	145	0	10	90	2	24	74	0	25	75	0.20	1.56	0.56	0.49	0.30	2.34	1.52	1.60	0.34	2.40	1.87	1.93	23	5	59	11	2	25
1030-1	FWD	5	63	27	130	0	58	42	3	32	65	1	52	47	0.30	1.86	0.81	0.75	0.61	2.34	1.75	1.79	0.76	2.38	2.01	2.08	4	3	61	20	5	40
	AFT	4	63	22	129	0	53	47	0	46	54	0	71	29	0.25	1.64	0.76	0.69	0.66	2.30	1.69	1.74	1.00	2.40	1.97	2.05	1	9	64	22	4	40
1030-2	FWD	3	78	10	158	1	42	57	0	53	47	0	70	30	0.24	1.65	0.64	0.57	0.75	2.26	1.69	1.70	1.17	2.36	1.99	2.05	5	9	71	13	2	30
	AFT	2	78	7	157	1	23	76	0	28	72	0	30	70	0.34	1.94	0.62	0.77	0.83	2.40	1.79	1.82	0.63	2.43	2.05	2.10	2	0	66	30	2	[illegible]
1031-1	FWD	17	70	20	140	0	99	1	18	34	43	0	51	49	0.25	1.67	0.71	0.63	0.72	2.33	1.74	1.80	1.38	2.44	2.10	2.16	2	8	70	17	3	[illegible]
	AFT	17	70	18	140	0	14	86	15	43	42	0	47	53	0.24	1.65	0.71	0.62	0.53	2.35	1.65	1.70	1.15	2.35	2.00	2.05	4	4	70	10	4	[illegible]
1031-2	FWD	19	82	6	67	0	99	1	8	53	39	0	60	40	0.26	1.38	0.60	0.72	0.46	2.34	1.73	1.82	1.40	2.57	2.05	2.09	0	5	64	22	9	42
	AFT	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1033-1	FWD	10	47	45	135	0	89	11	0	3	97	0	2	98	0.28	1.10	0.54	0.50	0.70	2.28	1.35	1.30	1.26	2.42	2.15	2.20	11	1	85	3	0	45
	AFT	11	47	45	135	0	10	90	3	8	89	0	3	97	0.30	1.20	0.53	0.50	0.64	2.32	1.40	1.40	0.84	2.44	2.13	2.20	8	1	90	1	0	45
1033-2	FWD	0	54	34	131	0	64	16	1	4	95	0	0	100	0.30	1.52	0.53	0.49	0.49	2.30	1.30	1.20	0.54	2.41	2.15	2.21	16	0	79	5	0	50
	AFT	0	54	34	131	0	86	14	0	5	95	0	1	99	0.26	1.38	0.54	0.50	0.59	2.32	1.25	1.20	0.33	2.44	2.15	2.24	12	0	84	[illegible]	0	50

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EXPOSURE-PROCESSING SUMMARY

MISSION NUMBER	CAMERA	SOLAR ELEVATION (DEG)		SOLAR AZIMUTH (DEG)		PREDICTED PROCESSING (%)			PERFORMED PROCESSING (%)			COMPUTED PROCESSING (%)			TERRAIN D-MIN RANGE				TERRAIN D-MAX RANGE				CLOUD D-MAX RANGE				UNDER EXPOSED (%)	UNDER PROCESSED (%)	NOMINAL EXP & PRO (%)	OVER PROCESSED (%)	OVER EXPOSED (%)	CLOUD COVER (%)
		[illegible]	[illegible]	[illegible]	[illegible]	P	I	F	P	I	F	P	I	F	LOW	HIGH	MEAN	MEDIAN	LOW	HIGH	MEAN	MEDIAN	LOW	HIGH	MEAN	MEDIAN						
1034-1	FWD	[illegible]	77	16	[illegible]	3	[illegible]	[illegible]	3	21	76	0	20	80	0.25	1.60	0.57	0.50	0.55	2.40	1.51	1.61	0.81	2.45	2.22	2.26	18	3	70	7	2	35
	AFT	[illegible]	77	10	[illegible]	0	[illegible]	45	2	31	67	0	[illegible]	[illegible]	0.25	1.23	0.55	0.53	0.41	2.35	1.54	1.60	0.97	2.44	2.19	2.25	18	4	71	7	0	35
1034-2	FWD	29	6	0	[illegible]	0	[illegible]	12	5	[illegible]	69	0	27	73	0.15	1.52	0.57	0.52	0.72	2.40	1.63	1.60	1.21	2.47	2.25	2.31	12	4	73	8	0	45
	AFT	30	[illegible]	[illegible]	[illegible]	0	[illegible]	59	6	37	[illegible]	0	34	[illegible]	0.24	1.60	0.54	[illegible]	0.70	2.32	1.52	[illegible]	1.08	2.49	2.22	2.29	12	10	73	4	2	[illegible]
1035-1	FWD	13	[illegible]	[illegible]	144	0	[illegible]	[illegible]	0	[illegible]	[illegible]	0	[illegible]	[illegible]	0.24	1.50	0.52	0.45	0.61	2.44	1.40	1.40	1.06	2.43	2.15	2.22	23	1	71	4	1	30
	AFT	13	[illegible]	[illegible]	144	0	5	[illegible]	1	4	[illegible]	0	[illegible]	[illegible]	0.24	[illegible]	0.50	0.43	0.69	2.42	1.46	1.53	[illegible]	2.55	2.15	2.24	27	3	66	5	0	[illegible]
1035-2	FWD	[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	76	4	[illegible]	[illegible]	0	[illegible]	[illegible]	0.21	1.56	0.52	0.47	0.83	[illegible]	1.32	[illegible]	[illegible]	2.50	2.09	2.18	24	5	65	4	0	40
	AFT	3	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	0.55	0.51	[illegible]	2.25	1.34	[illegible]	0.74	[illegible]	[illegible]	2.16	14	3	76	7	0	40
1036-1	FWD	13	[illegible]	[illegible]	170	0	[illegible]	34	[illegible]	[illegible]	[illegible]	1	14	[illegible]	0.20	1.51	0.48	0.42	[illegible]	2.40	1.54	1.53	1.10	2.47	2.26	2.33	33	5	59	2	1	40
	AFT	15	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	3	[illegible]	[illegible]	0	10	[illegible]	0.24	1.65	0.55	0.51	[illegible]	[illegible]	1.49	[illegible]	1.20	2.43	[illegible]	2.29	12	2	80	5	0	40
1036-2	FWD	10	[illegible]	[illegible]	[illegible]	0	15	[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	0.26	1.43	0.47	[illegible]	[illegible]	[illegible]	1.30	[illegible]	[illegible]	2.60	[illegible]	2.16	38	6	[illegible]	3	0	35
	AFT	[illegible]	[illegible]	[illegible]	[illegible]	0	4	[illegible]	[illegible]	[illegible]	[illegible]	0	17	83	0.23	[illegible]	[illegible]	0.44	[illegible]	[illegible]	1.37	1.40	[illegible]	2.40	[illegible]	2.20	28	4	64	4	0	35
1037-1	FWD	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.31	1.47	[illegible]	0.50	0.61	[illegible]	1.54	[illegible]	[illegible]	2.46	2.07	2.14	4	1	83	12	0	35
	AFT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.65	[illegible]	[illegible]	[illegible]	[illegible]	1.49	[illegible]	1.15	2.45	[illegible]	2.10	3	2	[illegible]	[illegible]	0	[illegible]
1037-2	FWD	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2.50	[illegible]	2.12	4	0	[illegible]	13	0	30
	AFT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7	[illegible]	[illegible]	[illegible]	[illegible]	23	[illegible]	[illegible]	1.30	[illegible]	0.64	[illegible]	[illegible]	[illegible]	[illegible]	1.10	[illegible]	2.03	2.10	4	5	77	[illegible]	0	30
1038-1	FWD	[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	79	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	0.16	1.11	0.51	0.40	[illegible]	2.30	1.56	1.52	[illegible]	2.40	2.11	2.19	29	3	65	3	0	[illegible]
	AFT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	22	[illegible]	[illegible]	[illegible]	[illegible]	0	11	[illegible]	0.25	1.37	0.53	0.47	[illegible]	2.31	[illegible]	1.52	[illegible]	[illegible]	2.05	[illegible]	33	3	[illegible]	[illegible]	0	[illegible]
1038-2	FWD	7	[illegible]	[illegible]	[illegible]	1	37	[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	0.21	1.40	0.56	0.51	[illegible]	[illegible]	[illegible]	1.54	1.00	2.50	[illegible]	2.06	23	1	[illegible]	10	0	[illegible]
	AFT	[illegible]	[illegible]	[illegible]	[illegible]	3	[illegible]	[illegible]	[illegible]	[illegible]	73	0	26	74	0.19	1.73	0.61	[illegible]	[illegible]	[illegible]	[illegible]	1.57	0.35	2.45	1.96	2.01	14	12	[illegible]	17	[illegible]	[illegible]
1039-1	FWD	[illegible]	[illegible]	[illegible]	160	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	24	75	[illegible]	1.53	0.65	0.58	[illegible]	[illegible]	[illegible]	[illegible]	1.11	[illegible]	2.14	2.18	3	4	79	14	0	[illegible]
	AFT	7	[illegible]	[illegible]	160	0	60	40	[illegible]	[illegible]	[illegible]	0	31	69	[illegible]	1.55	0.57	[illegible]	0.77	[illegible]	1.75	1.79	1.11	2.47	2.13	2.18	4	3	77	15		[illegible]
1039-2	FWD	8	[illegible]	10	[illegible]	[illegible]	61	[illegible]	19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.30	1.38	[illegible]	[illegible]	[illegible]	[illegible]	1.69	[illegible]	0.84	2.50	2.04	2.12	2	5	81	12	[illegible]	[illegible]
	AFT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	47	51	20	[illegible]	[illegible]	7	57	[illegible]	0.27	1.60	0.67	0.65	[illegible]	[illegible]	1.61	1.60	0.77	2.51	[illegible]	2.09	[illegible]	4	81	12	[illegible]	[illegible]
1040-1	FWD	11	73	[illegible]	[illegible]	0	79	21	10	31	[illegible]	[illegible]	35	63	[illegible]	1.71	0.71	0.63	0.54	[illegible]	1.71	1.74	1.16	2.40	2.04	2.10	0	3	75	17	0	[illegible]
	AFT	11	73	[illegible]	[illegible]	0	67	33	14	[illegible]	44	2	53	[illegible]	[illegible]	1.62	0.66	[illegible]	0.65	2.36	1.65	1.64	[illegible]	2.41	2.04	2.15	1	6	79	13		[illegible]
1040-2	FWD	12	[illegible]	[illegible]	-21	0	[illegible]	34	7	30	[illegible]	3	[illegible]	[illegible]	0.24	1.67	0.77	0.72	0.77	[illegible]	1.61	1.61	1.03	2.45	2.01	2.06	1	1	72	25	[illegible]	[illegible]
	AFT	11	[illegible]	[illegible]	-24	1	[illegible]	41	3	[illegible]	[illegible]	0	32	68	0.11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.72	1.74	1.07	[illegible]	[illegible]	2.12	3	2	[illegible]	[illegible]	0	20
1041-1	FWD	[illegible]	[illegible]	30	129	0	100	0	7	40	53	0	46	54	0.14	2.14	0.56	0.51	[illegible]	2.33	[illegible]	1.59	0.17	2.46	2.15	2.26	6	10	[illegible]	4	[illegible]	[illegible]
	AFT	[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	47	53	0.22	1.62	0.62	0.57	[illegible]	2.33	1.62	[illegible]	0.15	2.43	2.15	2.23	1	5	86	8	[illegible]	[illegible]
1041-2	FWD	28	73	[illegible]	[illegible]	[illegible]	99	0	[illegible]	26	[illegible]	0	23	77	0.31	1.51	0.60	0.62	0.76	2.33	1.54	1.51	1.40	2.46	2.15	2.19	4	2	[illegible]	13	[illegible]	[illegible]
	AFT	[illegible]	[illegible]	[illegible]	130	[illegible]	[illegible]	0	6	30	[illegible]	0	30	70	0.17	[illegible]	0.60	0.57	[illegible]	2.37	1.55	1.54	1.05	2.47	2.19	2.25	9	3	[illegible]	[illegible]	[illegible]	[illegible]
1042-1	FWD	[illegible]	76	16	163	0	19	81	9	9	82	0	15	85	0.33	1.47	0.63	0.57	[illegible]	2.33	1.53	1.55	1.45	2.49	2.22	2.26	7	0	80	11		37
	AFT	9	75	15	164	0	7	93	5	8	87	0	13	77	0.14	1.44	0.62	0.57	0.61	2.31	1.52	1.53	0.93	2.49	2.15	2.21	5	1	83	11	0	37
1042-2	FWD	37	83	-179	177	0	11	89	5	16	79	0	11	89	0.14	1.26	0.53	0.47	0.52	2.39	1.48	1.55	0.35	2.45	2.17	2.25	24	0	66	9	0	35
	AFT	37	[illegible]	-179	177	0	10	90	8	16	76	0	10	90	0.15	1.31	0.52	0.47	0.62	2.37	1.47	1.48	0.85	2.39	2.17	2.25	20	2	75	4	0	35
1043-1	FWD	12	74	16	156	0	20	80	[illegible]	23	65	4	26	70	[illegible]	1.63	0.54	0.47	0.61	2.25	1.40	1.39	0.98	2.41	2.13	2.16	20	4	67	3	[illegible]	35
	AFT	12	74	12	157	0	3	97	[illegible]	12	79	2	27	71	0.24	[illegible]	0.59	0.53	0.61	2.28	1.42	1.43	1.11	2.44	2.18	2.23	16	2	71	[illegible]	[illegible]	35
1043-2	FWD	[illegible]	86	-175	179	[illegible]	[illegible]	80	5	16	79	0	39	61	0.19	1.32	0.54	0.50	0.66	2.29	1.39	1.39	0.84	2.44	2.13	2.23	21	5	66	7	0	35
	AFT	19	86	-175	179	0	7	93	14	21	65	2	38	62	0.25	1.32	0.54	0.50	0.55	2.06	1.27	1.27	1.09	2.46	2.02	2.06	18	11	64	6	1	35
1101-1	FWD																															
	AFT																															
1101-2	FWD						*													*									*			
	AFT																															
1044-1	FWD	4	65	23	134	0	13	87	0	9	91	0	8	92	0.23	1.73	0.56	0.49	0.67	2.30	1.59	1.59	0.31	2.45	2.09	2.16	32	0	53	13	1	35
	AFT	6	65	22	134	0	19	81	5	16	79	0	23	77	0.27	1.45	0.59	0.53	0.76	[illegible]	1.57	1.57	0.32	2.47	2.06	2.15	21	2	65	10	1	35
1044-2	FWD	7	74	16	138	4	16	80	0	8	92	0	7	93	0.20	1.32	0.53	0.48	0.45	2.37	1.54	1.55	0.76	2.49	2.06	2.23	36	0	57	7	0	35
	AFT	7	74	16	137	8	24	68	6	24	70	0	28	72	0.22	1.31	0.53	0.49	0.50	2.48	1.55	1.57	0.44	2.55	2.05	2.10	22	7	64	6	0	35

* DATA NOT PRESENTLY AVAILABLE

SECTION A

APPENDIX

MISSION * 1044-1 * INSTR * FWD * 1/16/68 PLOT OF D MIN * TERRAIN * PROCESSING * INTERMEDIATE

ARITH MEAN * [illegible] * MEDIAN * 0.94 * STD DEV * 0.29 * RANGE * 0.48 TO 1.48 WITH 13 SAMPLES

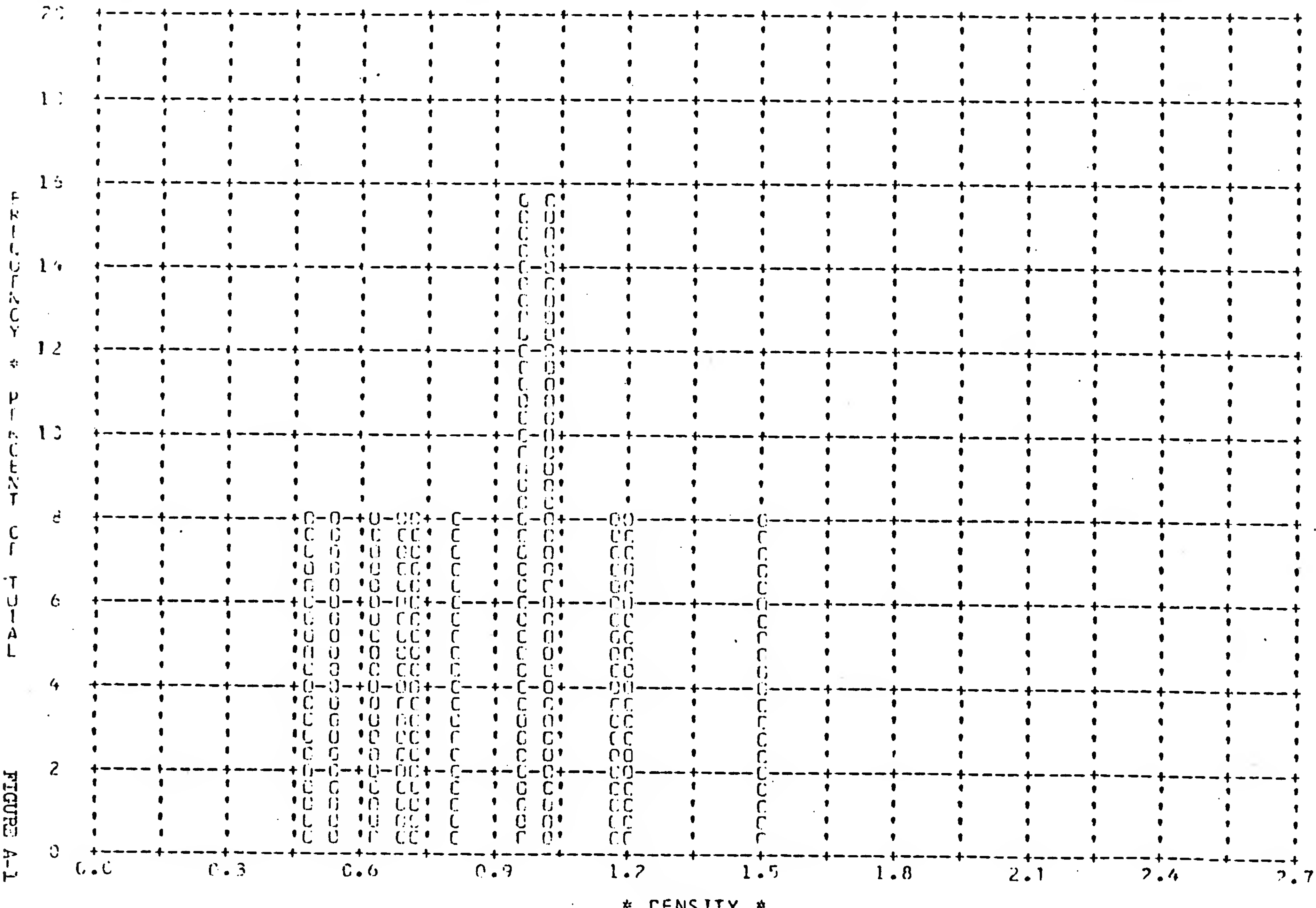

FIGURE A-1

MISSION * 1044-1 * INSTR * FWD * 1/16/68 PLOT OF D MAX * TERRAIN * PROCESSING * INTERMEDIATE

ARITH MEAN * 1.[illegible] * MEDIAN * 1.71 * STD DEV * 0.20 * RANGE * 1.32 TO 1.92 WITH 13 SAMPLES

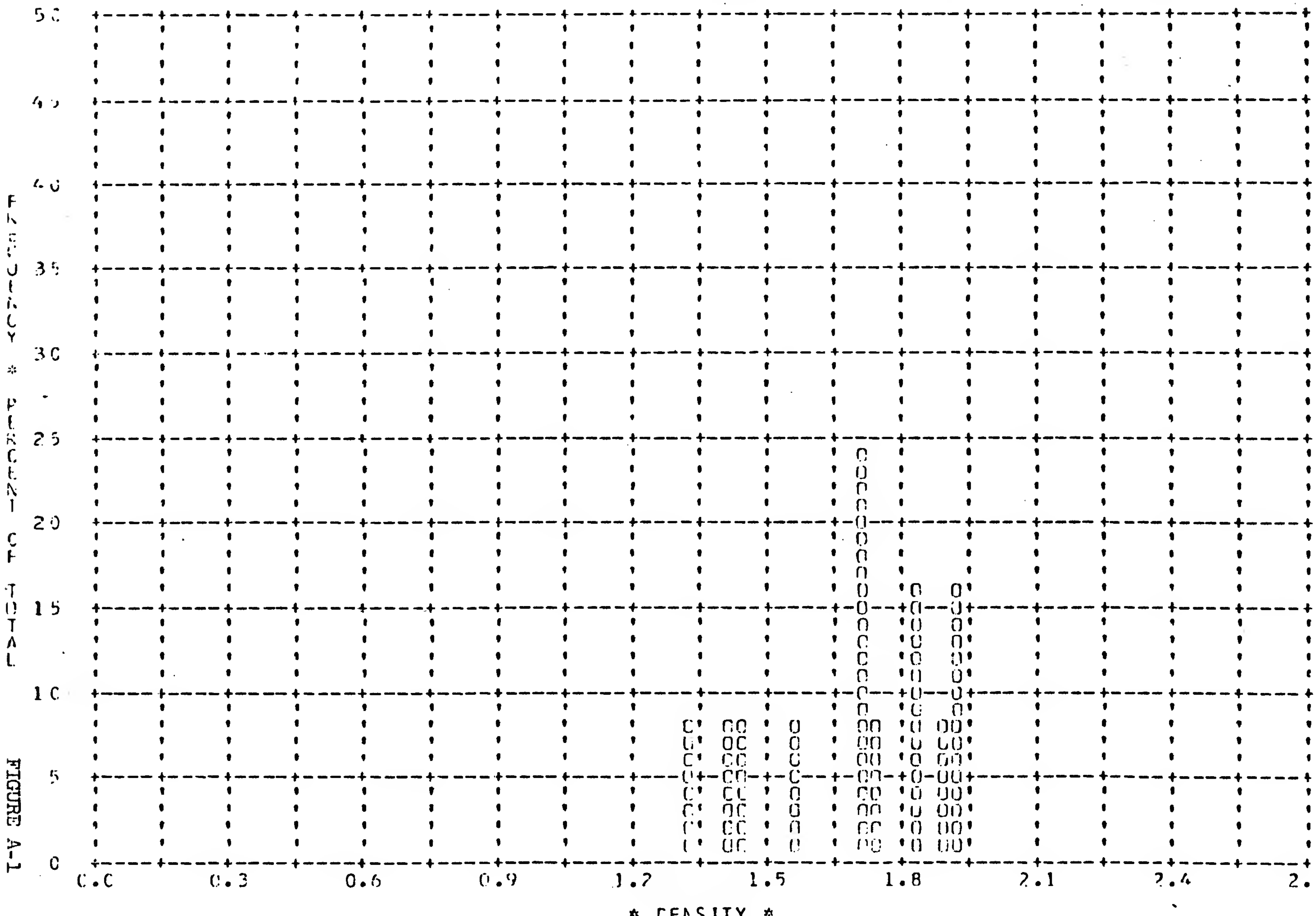

FIGURE A-1

~~TOP SECRET~~ C [redacted]

MISSION * 1044-1 * INSTR * FWD * 1/16/68 PLOT OF D MAX * CLOUD * PROCESSING * INTERMEDIATE

ARITH MEAN * 2.07 * MEDIAN * 2.09 * STD DEV * 0.25 * RANGE * 1.58 TO 2.44 WITH 13 SAMPLES

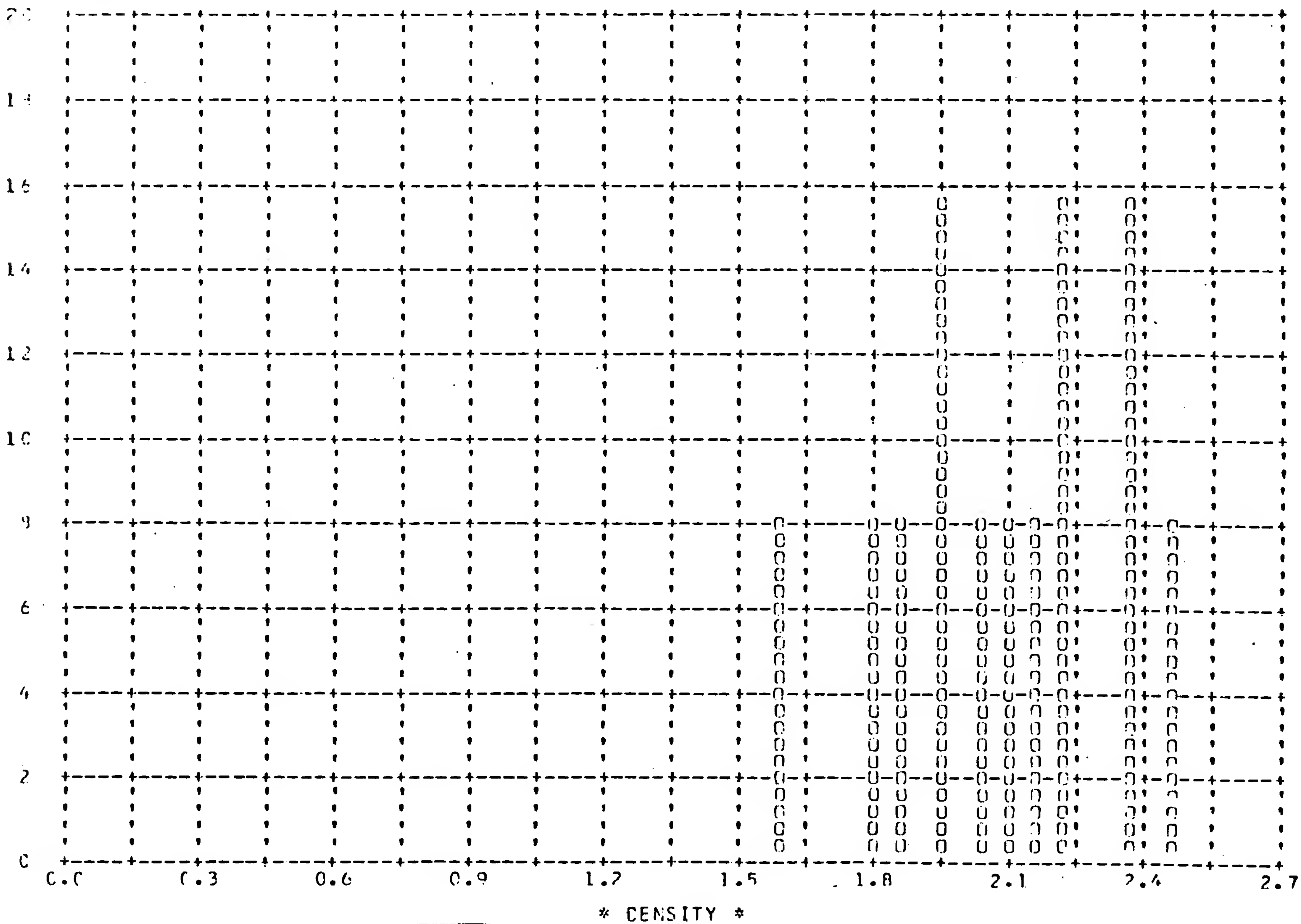

FIGURE A-1

~~TOP SECRET~~ C [redacted]

~~[illegible]~~ C/[redacted]

MISSION * 1044-1 * INSTR * FWD * 1/16/68 PLOT OF D MIN * TERRAIN * PROCESSING * FULL

ARITH MEAN * 0.55 * MEDIAN * 0.47 * STD DEV * 0.28 * RANGE * 0.23 TO 1.78 WITH 147 SAMPLES

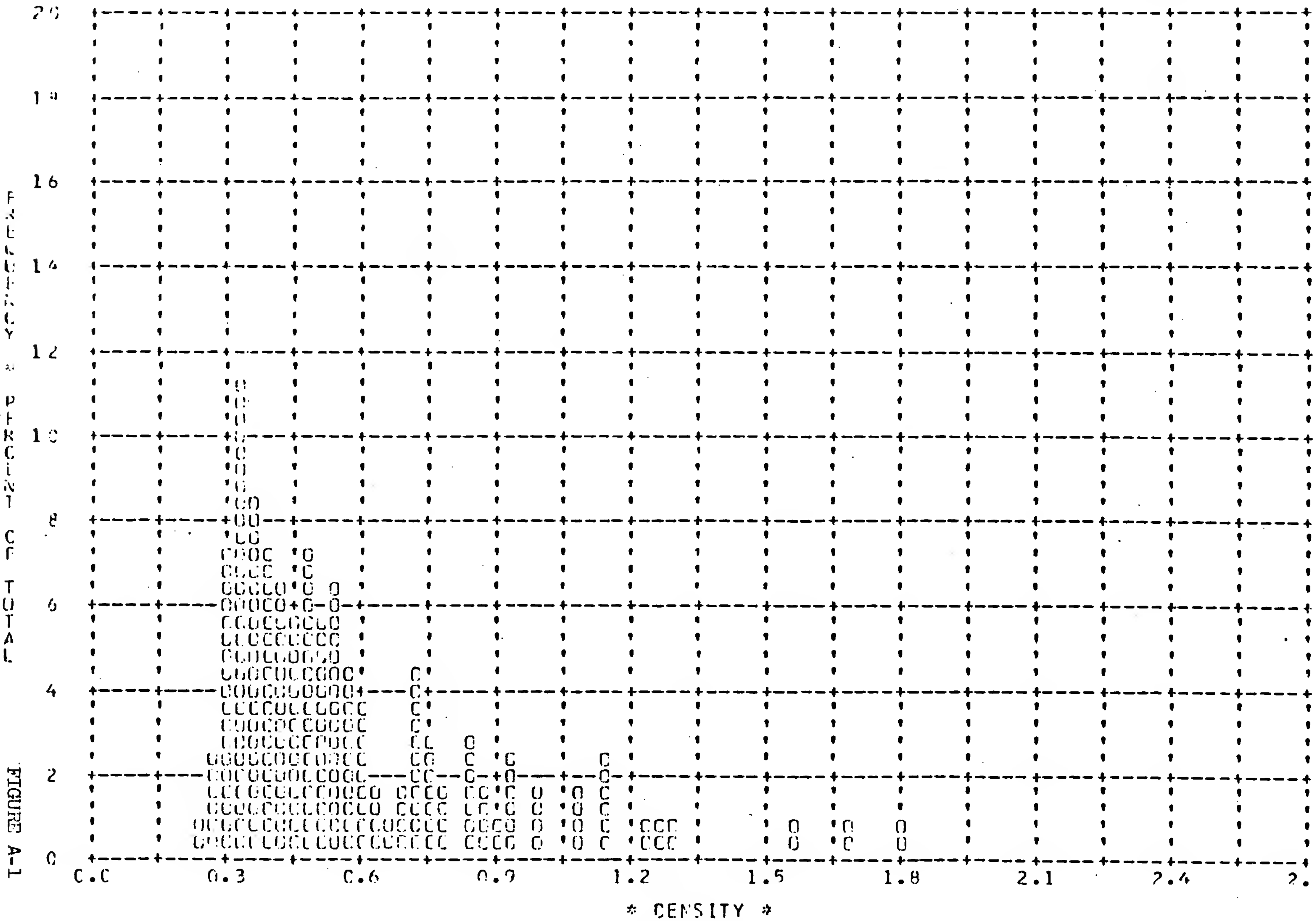

FIGURE A-1

~~TOP SECRET~~ C[redacted]

MISSION * 1046-1 * INSTR * FWD * 1/16/68 PLOT OF D MAX * TERRAIN * PROCESSING * FULL
ARITH MEAN * 1.[illegible] * MEDIAN * 1.57 * STD DEV * 0.40 * RANGE * 0.67 TO 2.36 WITH 147 SAMPLES

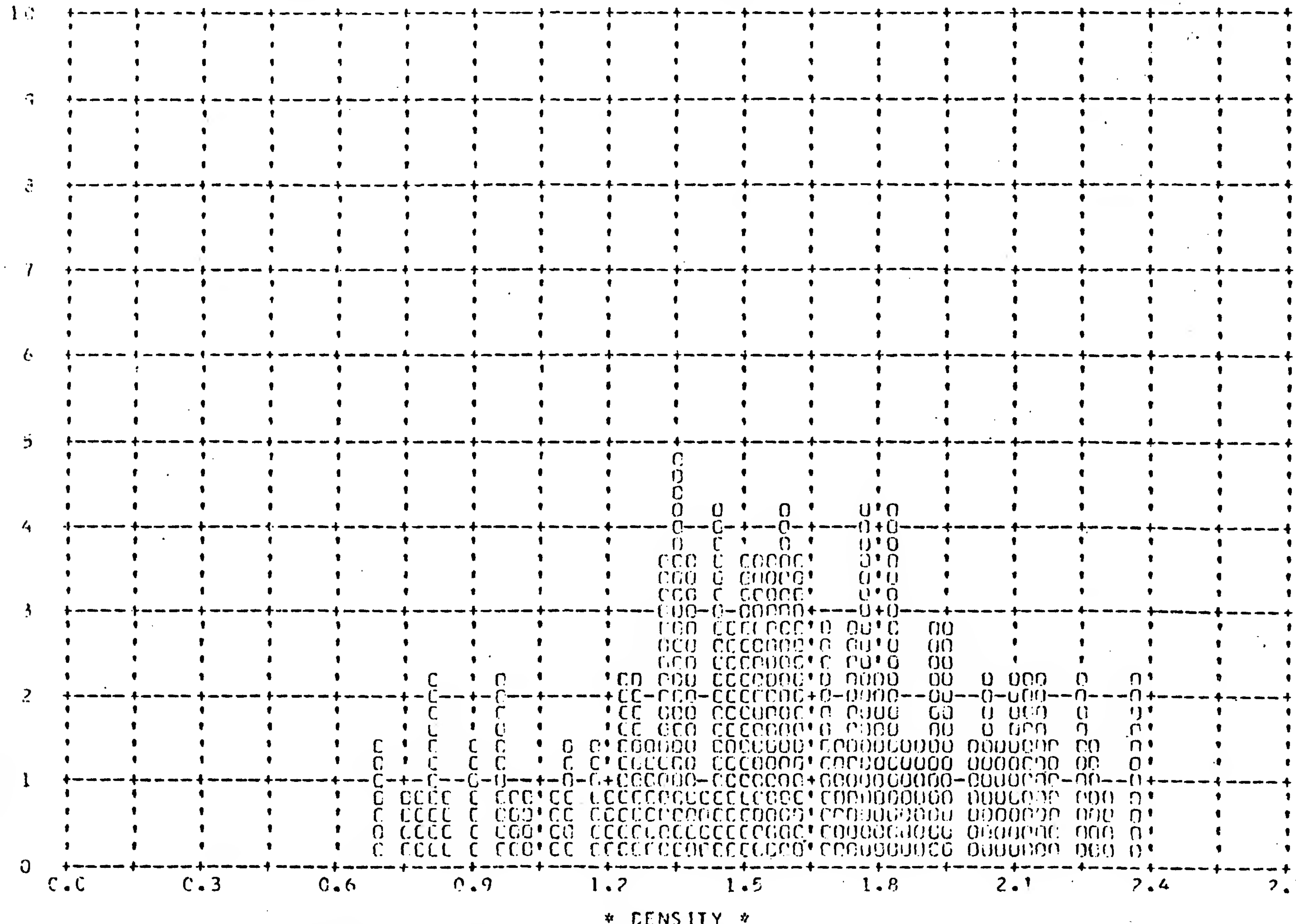

FIGURE A-1

MISSION * 1044-1 * INSTR * FWD * 1/16/68 PLOT OF D MAX * CLOUD * PROCESSING * DUAL GAMMA

ARITH MEAN * 1.61 * MEDIAN * 1.63 * STD DEV * 0.19 * RANGE * 0.97 TO 1.83 WITH 51 SAMPLES

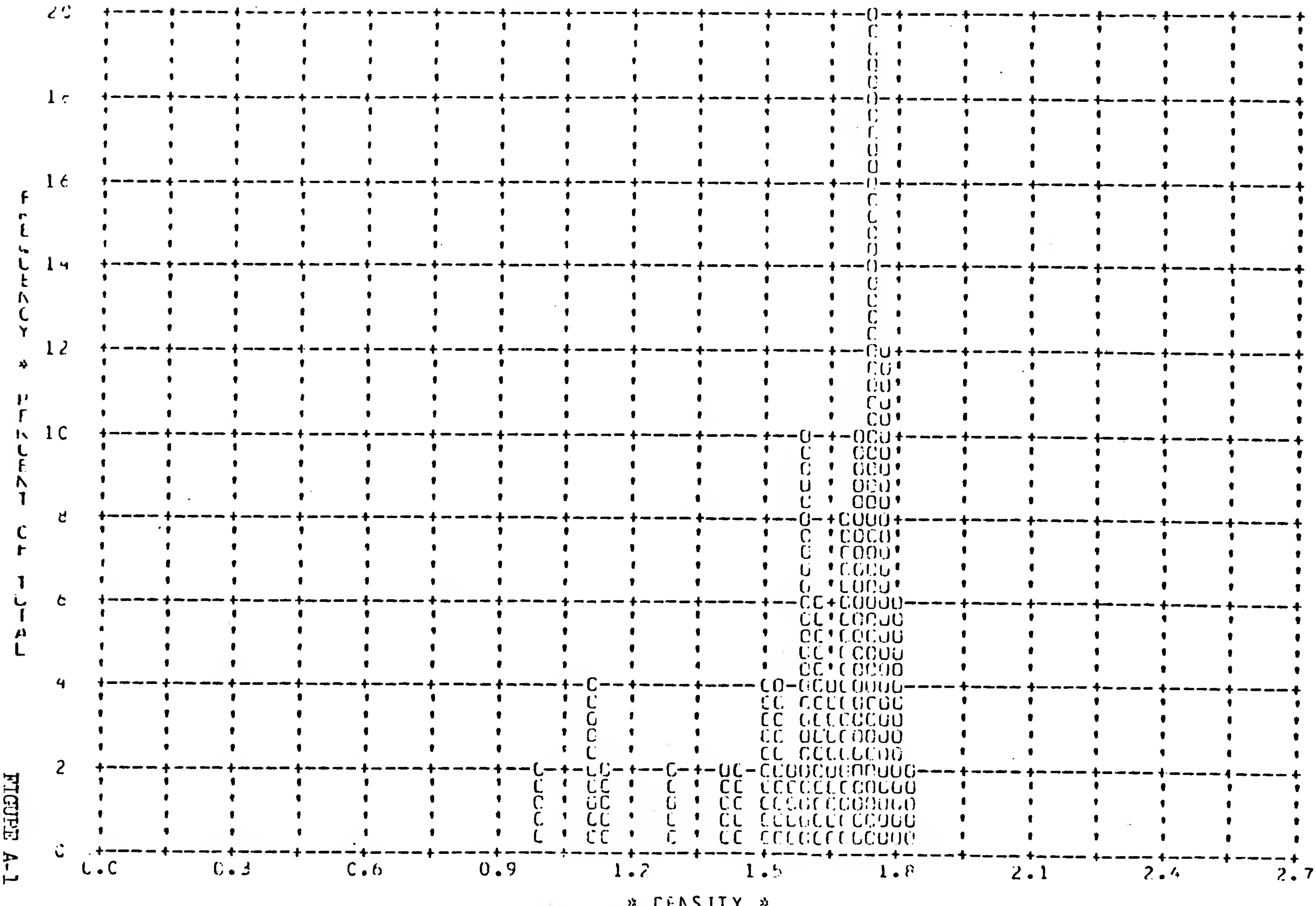

FIGURE A-1

MISSION * 1044-1 * INSTR * AFT * 1/16/68 PLOT OF D MIN * TERRAIN * PROCESSING * INTERMEDIATE

ARITH MEAN * 0.72 * MEDIAN * 0.74 * STD DEV * 0.30 * RANGE * 0.30 TO 1.45 WITH 37 SAMPLES

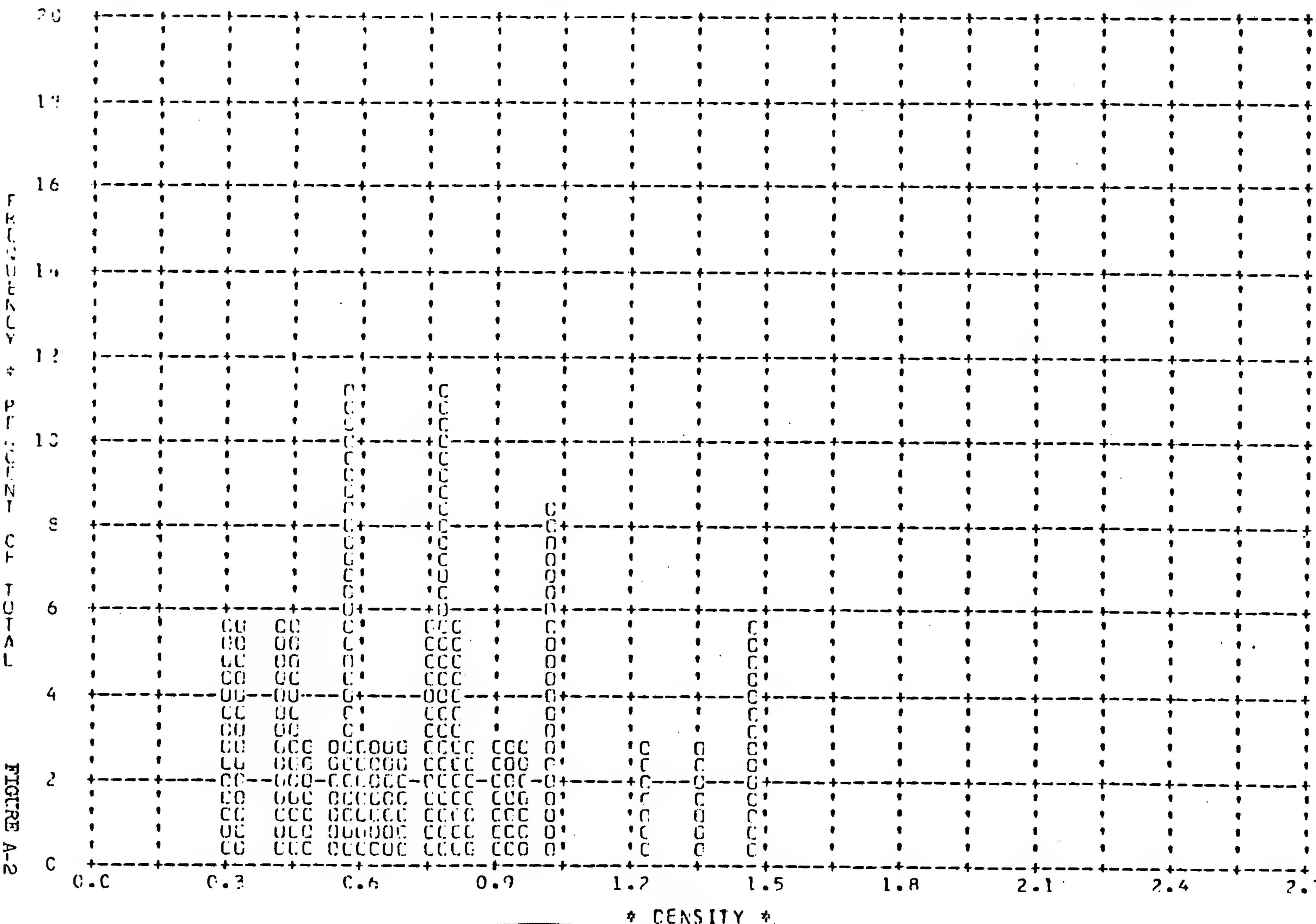

FIGURE A-2

MISSION * 1044-1 * INSTR * AFT * 1/16/68 PLOT OF D MAX * TERRAIN * PROCESSING * INTERMEDIATE

ARITH MEAN * 1.63 * MEDIAN * 1.63 * STD DEV * 0.26 * RANGE * 1.13 TO 2.20 WITH 37 SAMPLES

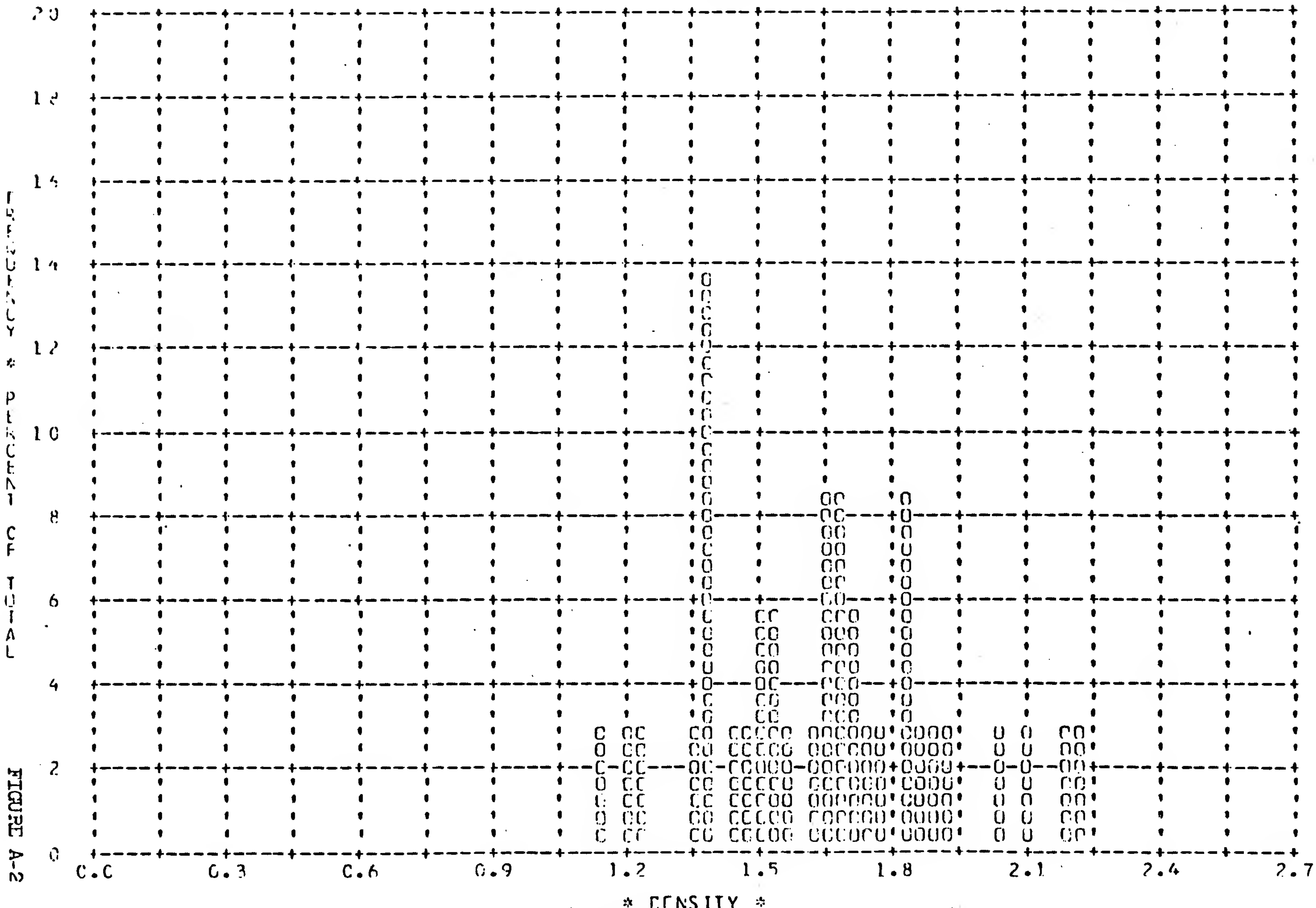

FIGURE A-2

~~TOP SECRET~~ C [redacted]

MISSION * 1044-1 * INSTR * AFT * 1/16/68 PLOT OF D MAX * CLOUD * PROCESSING * INTERMEDIATE

ARITH MEAN * 2.07 * MEDIAN * 2.12 * STD DEV * 0.24 * RANGE * 1.44 TO 2.46 WITH 33 SAMPLES

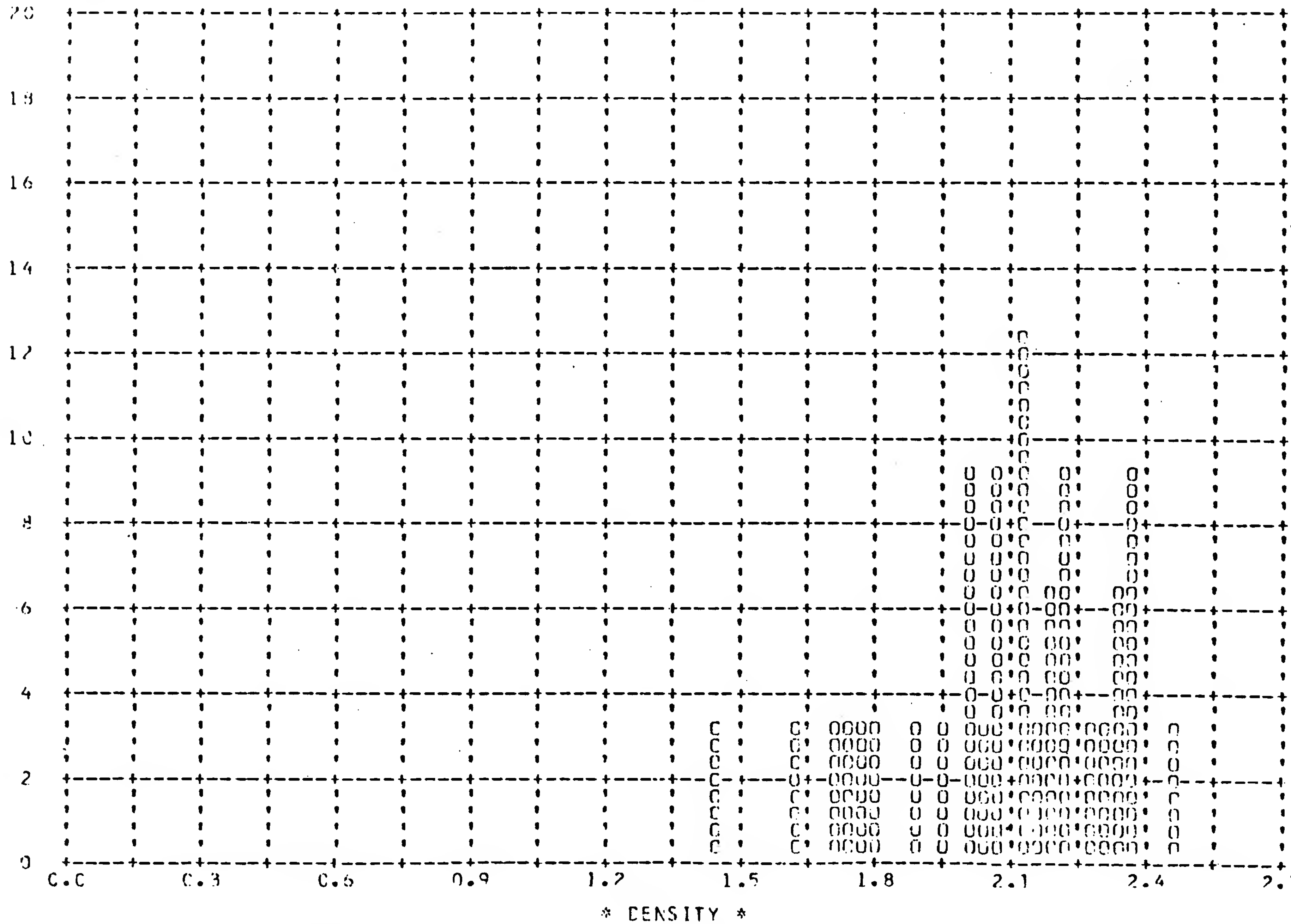

FIGURE A-2

~~TOP SECRET~~ C [redacted]

MISSION * 1044-1 * INSTR * AFT * 1/16/68 PLOT OF D MIN * TERRAIN * PROCESSING * FULL

ARITH MEAN * 0.55 * MEDIAN * 0.52 * STD DEV * 0.22 * RANGE * 0.27 TO 1.42 WITH 126 SAMPLES

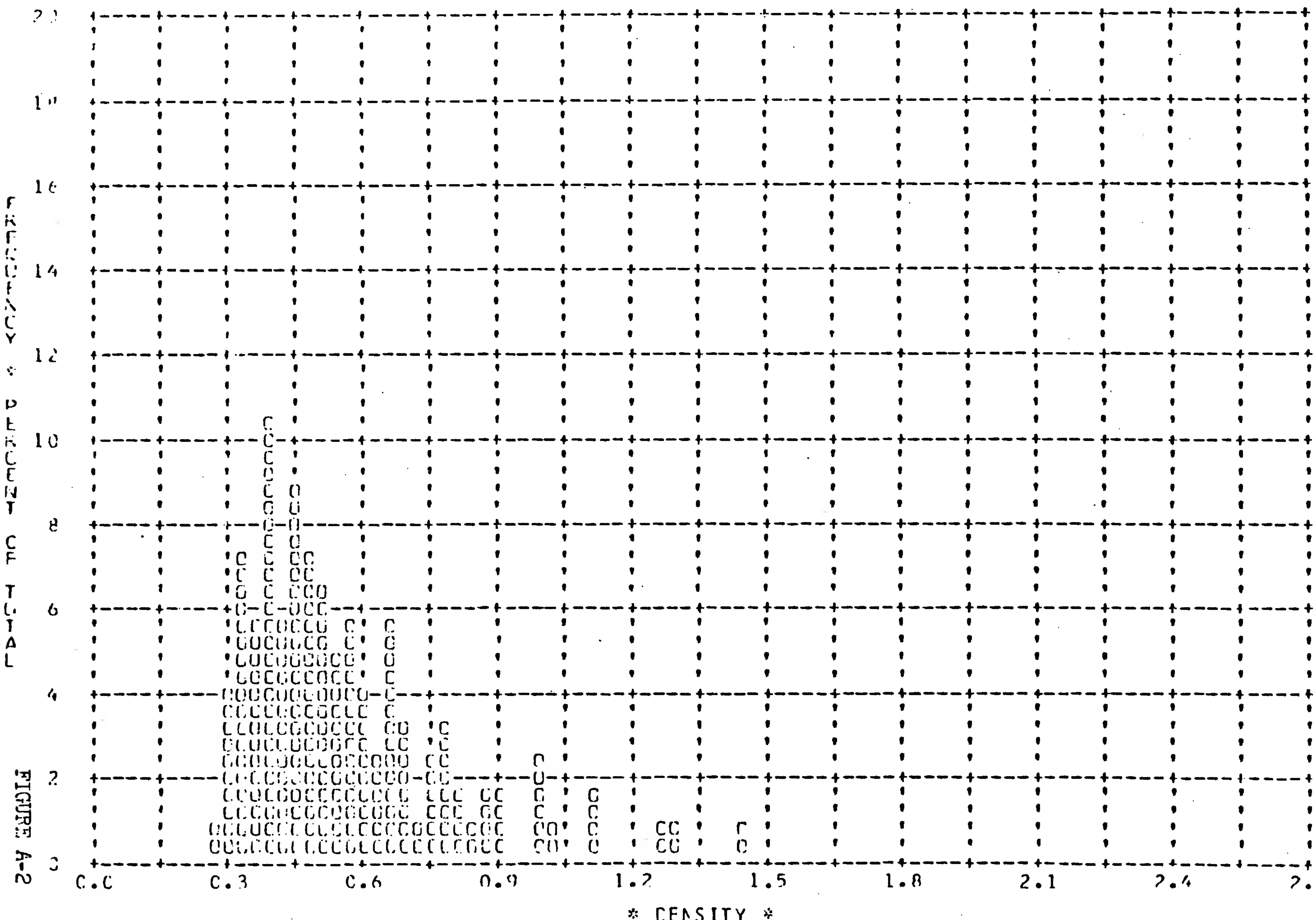

FIGURE A-2

MISSION * 1044-1 * INSTR * AFT * 1/16/68 PLOT OF D MAX * TERRAIN * PROCESSING * FULL

ARITH MEAN * 1.55 * MEDIAN * 1.54 * STD DEV * 0.36 * RANGE * 0.76 TO 2.41 WITH 126 SAMPLES

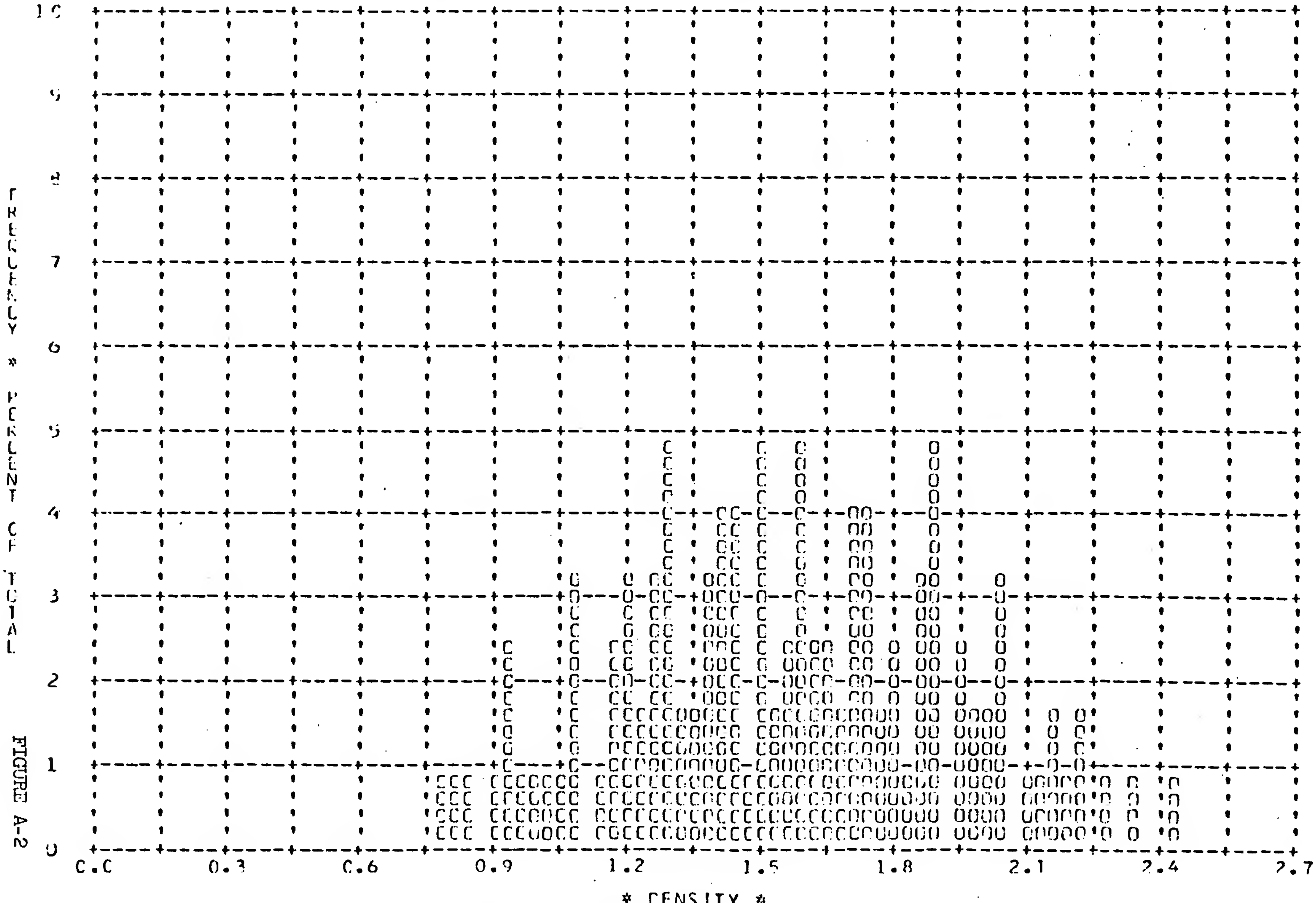

FIGURE A-2

MISSION * 1044-1 * INSTR * AFT * 1/16/68 PLOT OF D MAX * CLOUD * PROCESSING * FULL

ARITH MEAN * 2.08 * MEDIAN * 2.19 * STD DEV * 0.37 * RANGE * 0.32 TO 2.47 WITH 104 SAMPLES

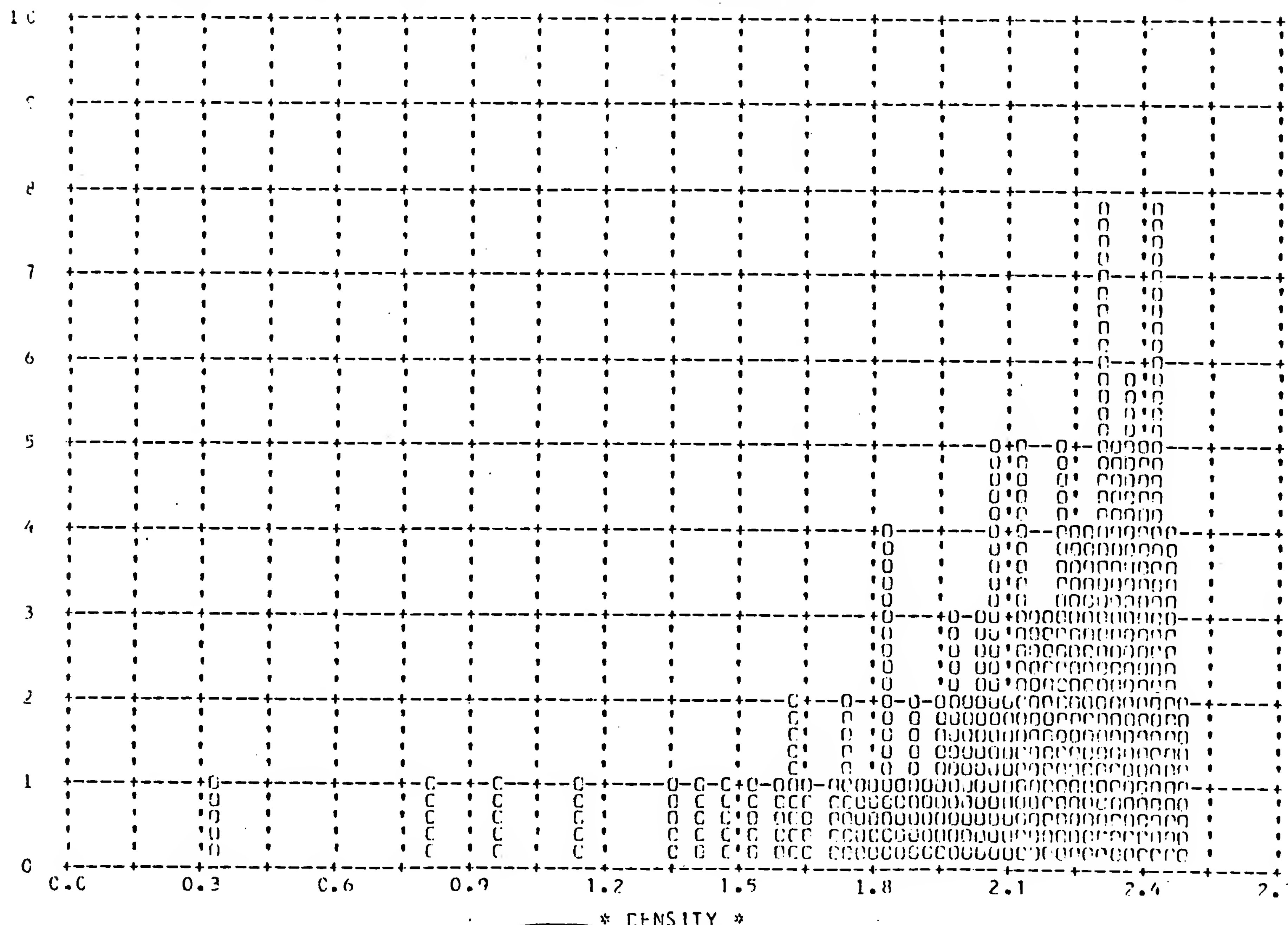

FIGURE A-2

MISSION * 1044-1 * INSTR * AFT * 1/16/68 PLOT OF D MIN * TERRAIN * PROCESSING * ALL LEVELS

ARITH MEAN * 0.55 * MEDIAN * 0.53 * STD DEV * 0.25 * RANGE * 0.27 TO 1.45 WITH 163 SAMPLES

FREQUENCY * PERCENT OF TOTAL

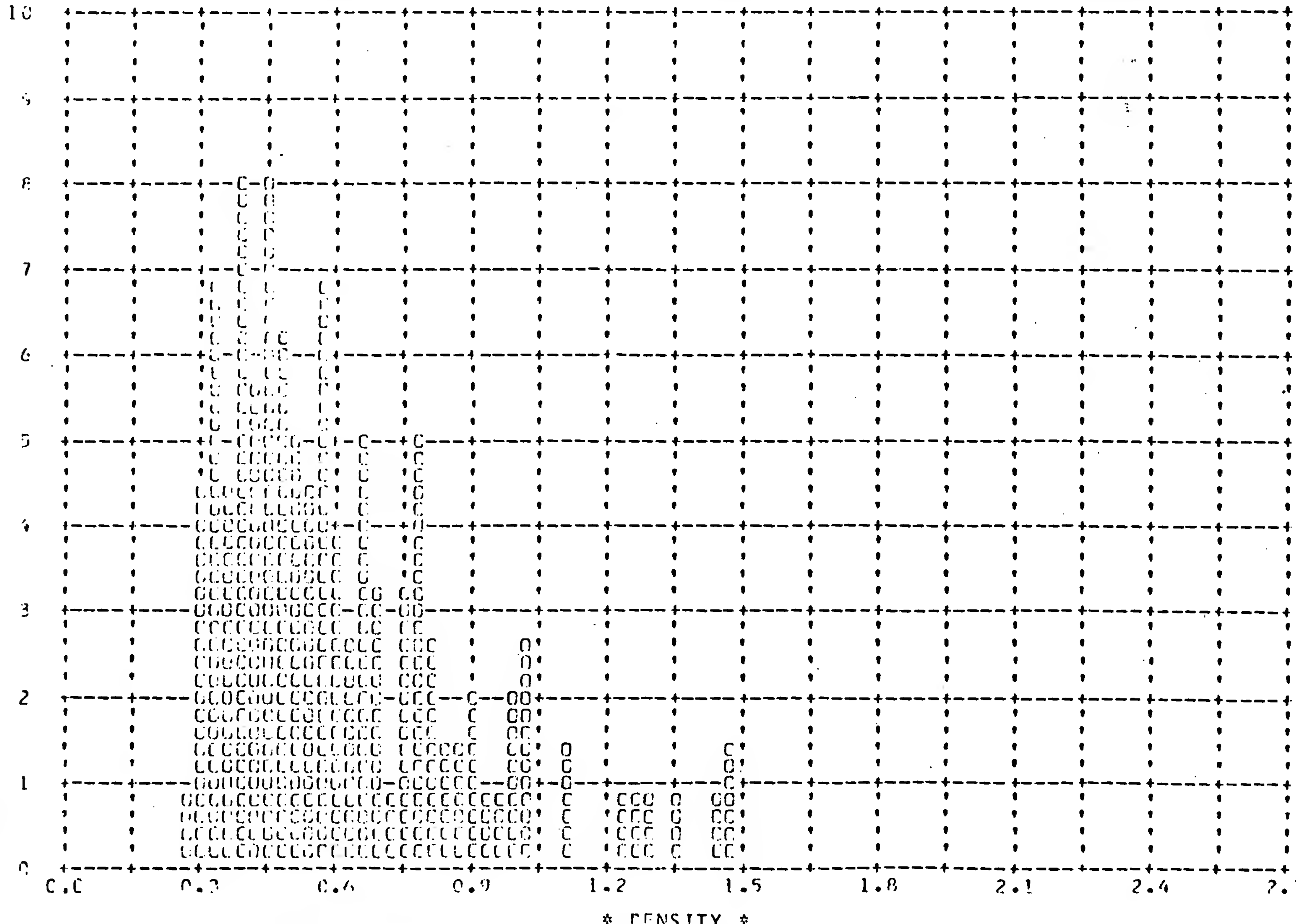

FIGURE A-2

MISSION * 1044-1 * INSTR * AFT * 1/16/68 PLOT OF D MAX * TERRAIN * PROCESSING * ALL LEVELS
ARITH MEAN * 1.57 * MEDIAN * 1.57 * STD DEV * 0.34 * RANGE * 0.76 TO 2.41 WITH 163 SAMPLES

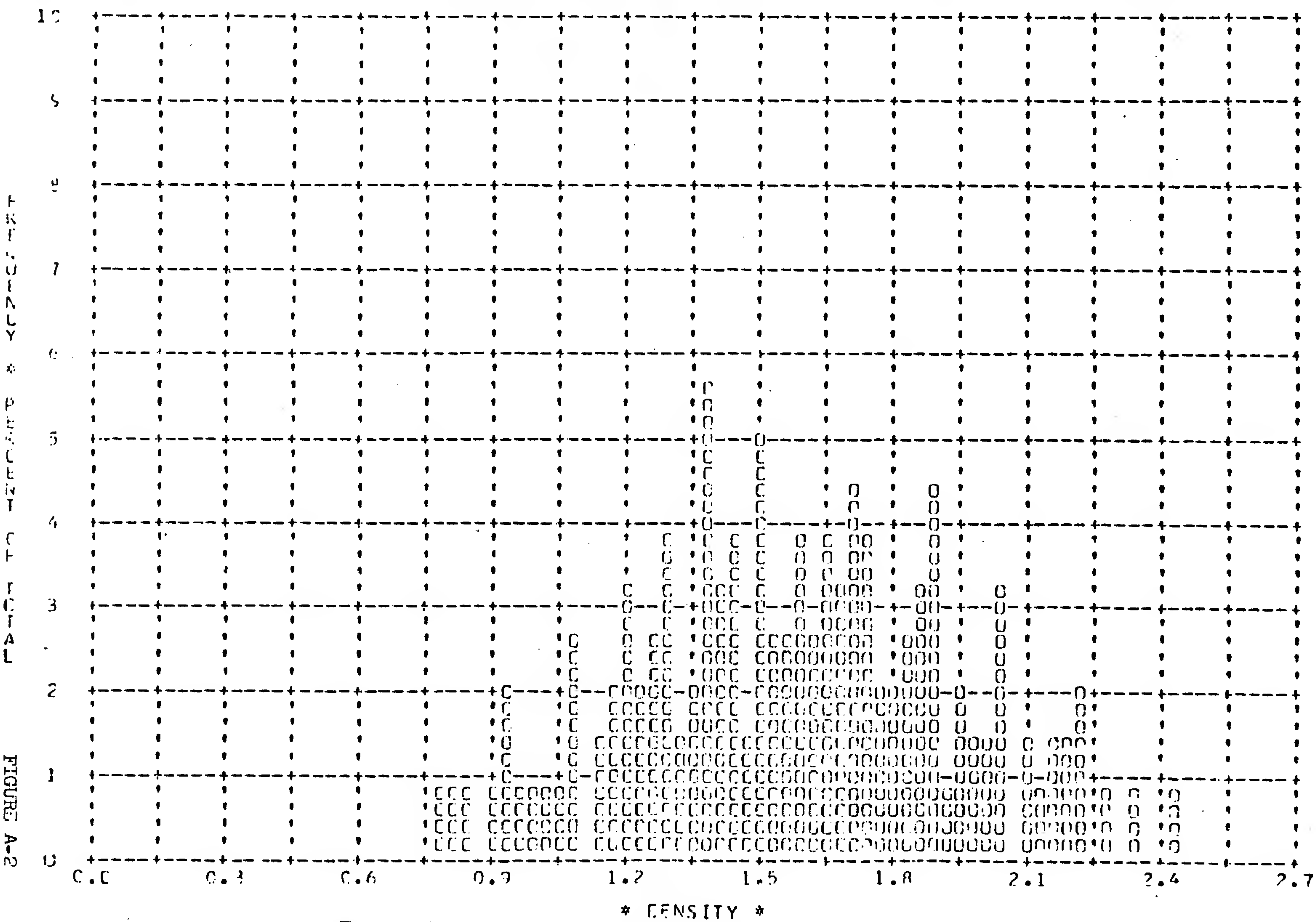

FIGURE A-2

MISSION * 10[illegible]-1 * INSTR * AFT * 1/16/68 PLOT OF D MAX * CLOUD * PROCESSING * ALL LEVELS

ARITH MEAN * [illegible] * MEDIAN * 2.15 * STD DEV * 0.35 * RANGE * 0.32 TO 2.47 WITH 137 SAMPLES

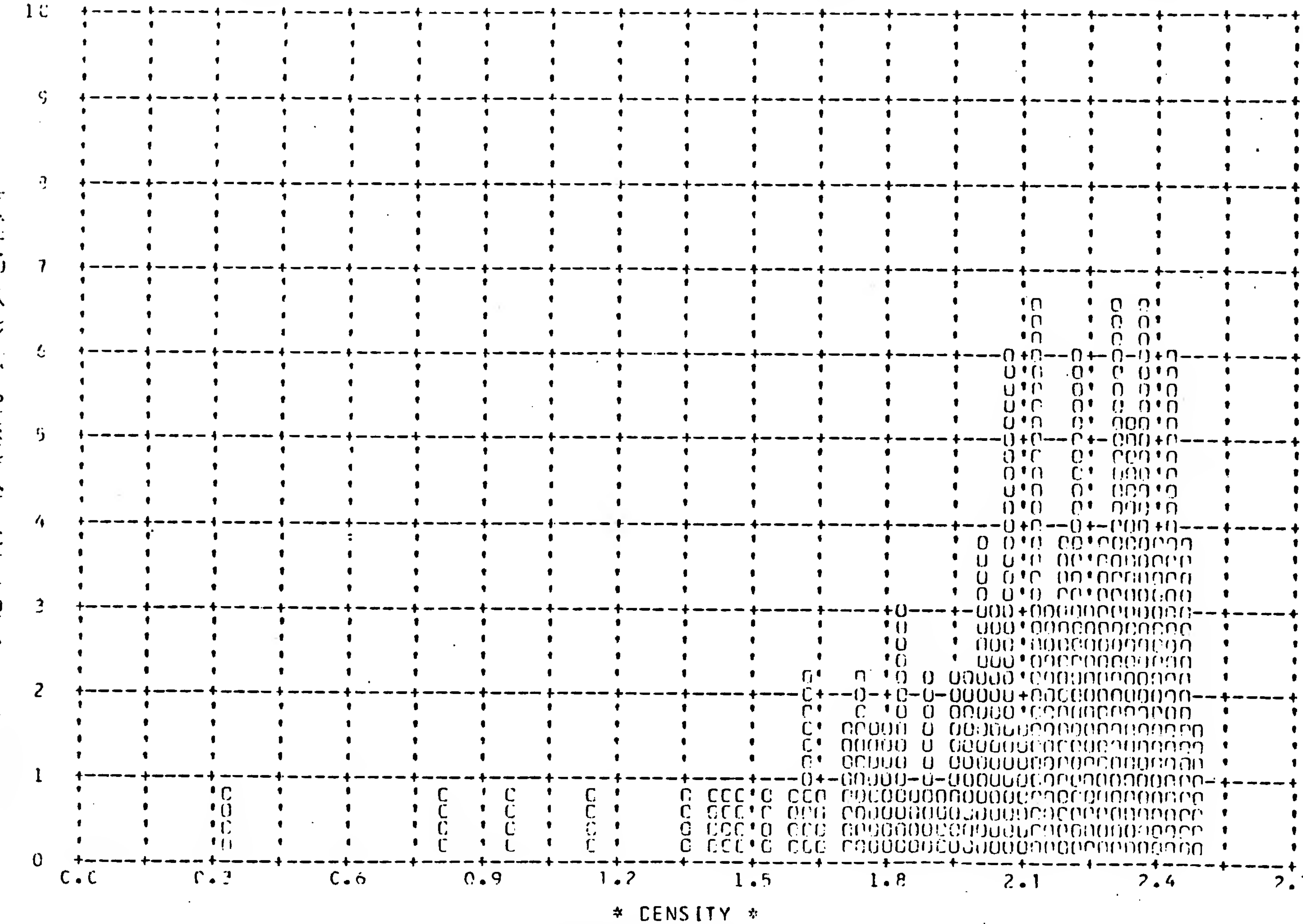

FIGURE A-2

MISSION * 1044-1 * INSTR * AFT * 1/16/68 PLOT OF D MIN * TERRAIN * PROCESSING * DUAL GAMMA

ARITH MEAN * 0.48 * MEDIAN * 0.41 * STD DEV * 0.20 * RANGE * 0.26 TO 1.05 WITH 68 SAMPLES

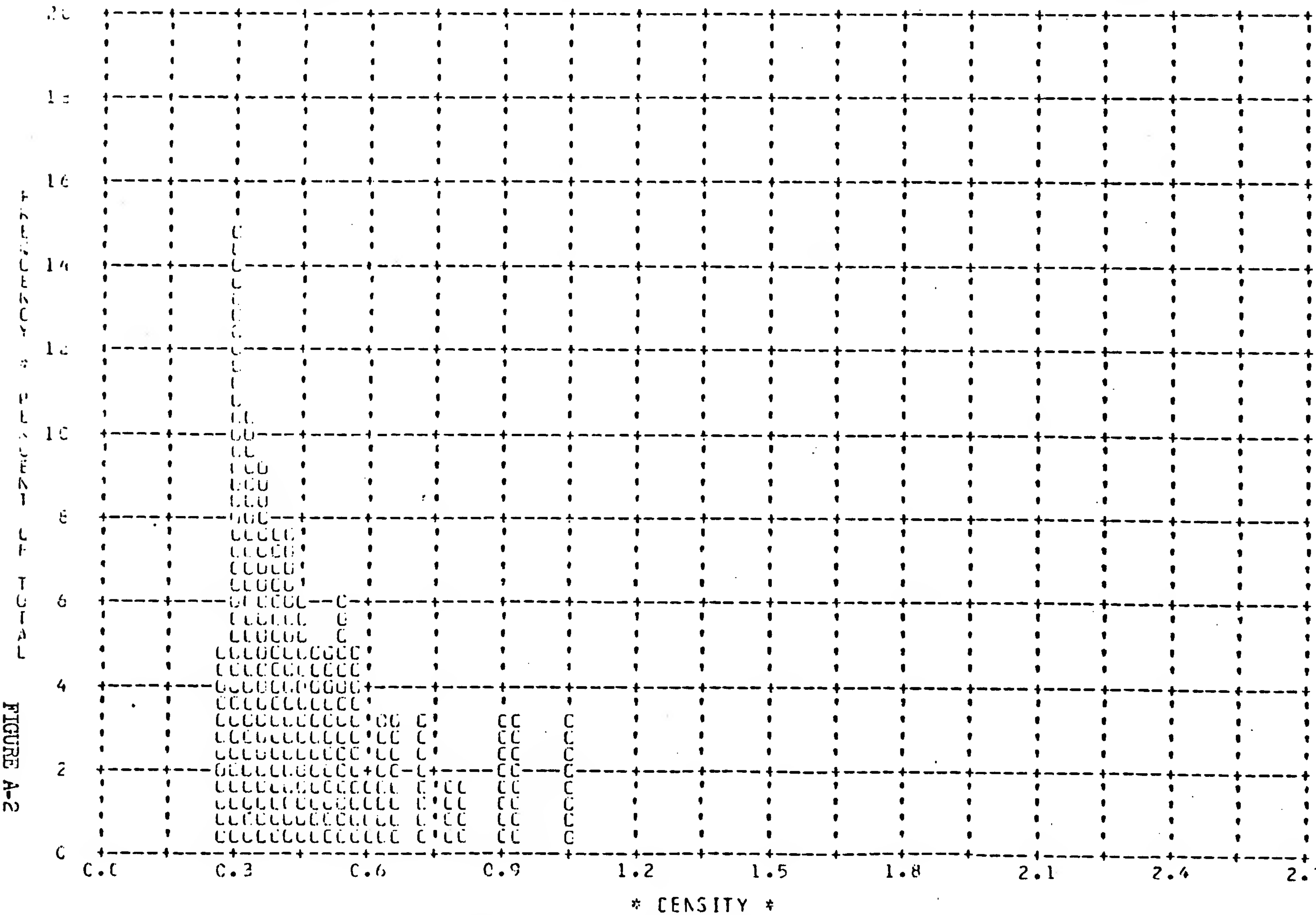

FIGURE A-2

MISSION * 1044-1 * INSTR * AFT * 1/16/68 PLOT OF D MAX * TERRAIN * PROCESSING * DUAL GAMMA

ARITH MEAN * 1.32 * MEDIAN * 1.42 * STD DEV * 0.35 * RANGE * 0.42 TO 1.75 WITH 68 SAMPLES

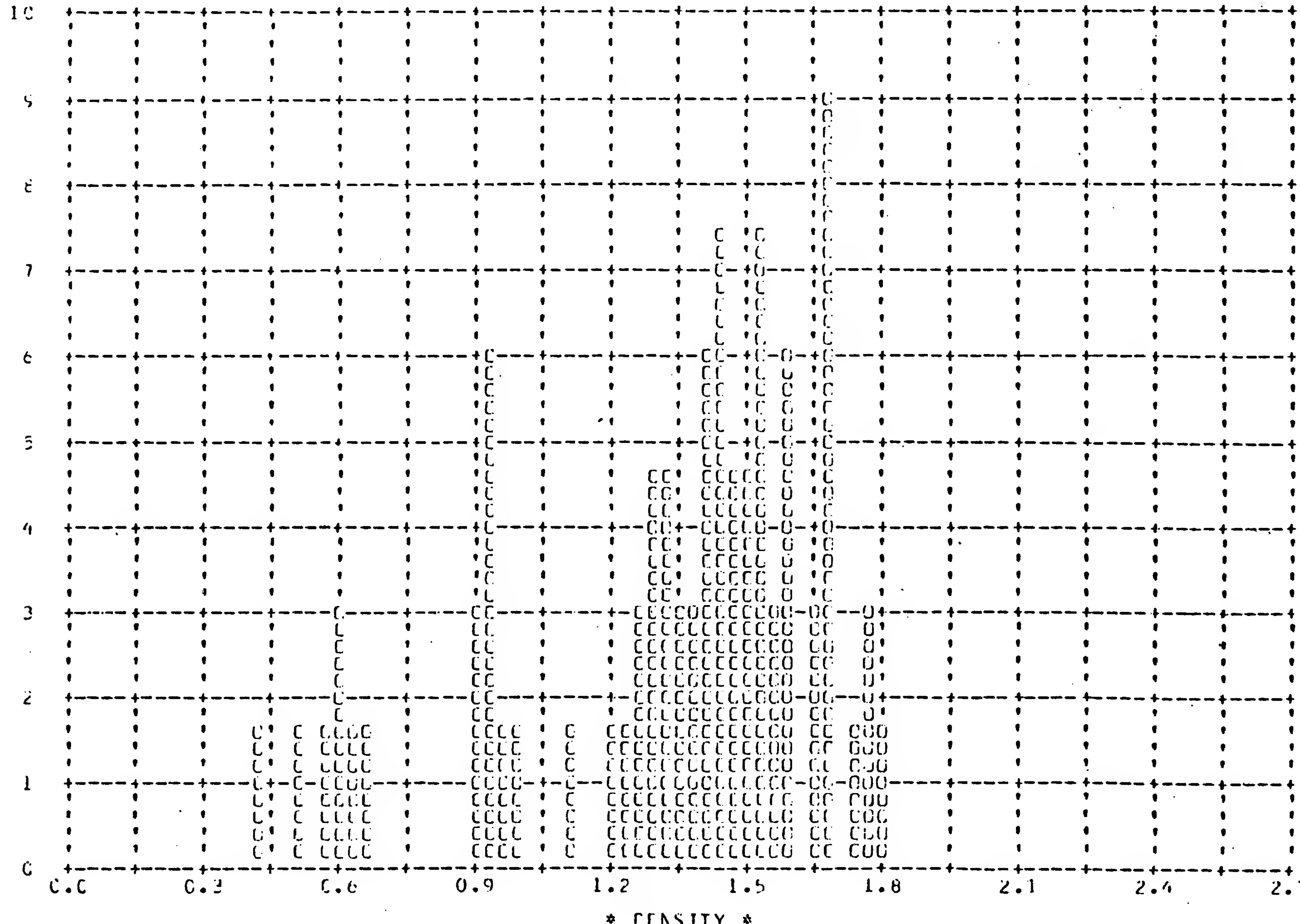

FIGURE A-2

~~TOP SECRET~~ C [redacted]

MISSION * 1044-1 * INSTR * AFT * 1/16/68 FREQ OF D MAX * CLOUD * PROCESSING * DUAL GAMMA

ARITH MEAN * 1.61 * MEDIAN * 1.71 * STD DEV * 0.25 * RANGE * 0.70 TO 1.88 WITH 58 SAMPLES

FREQUENCY * PERCENT OF TOTAL

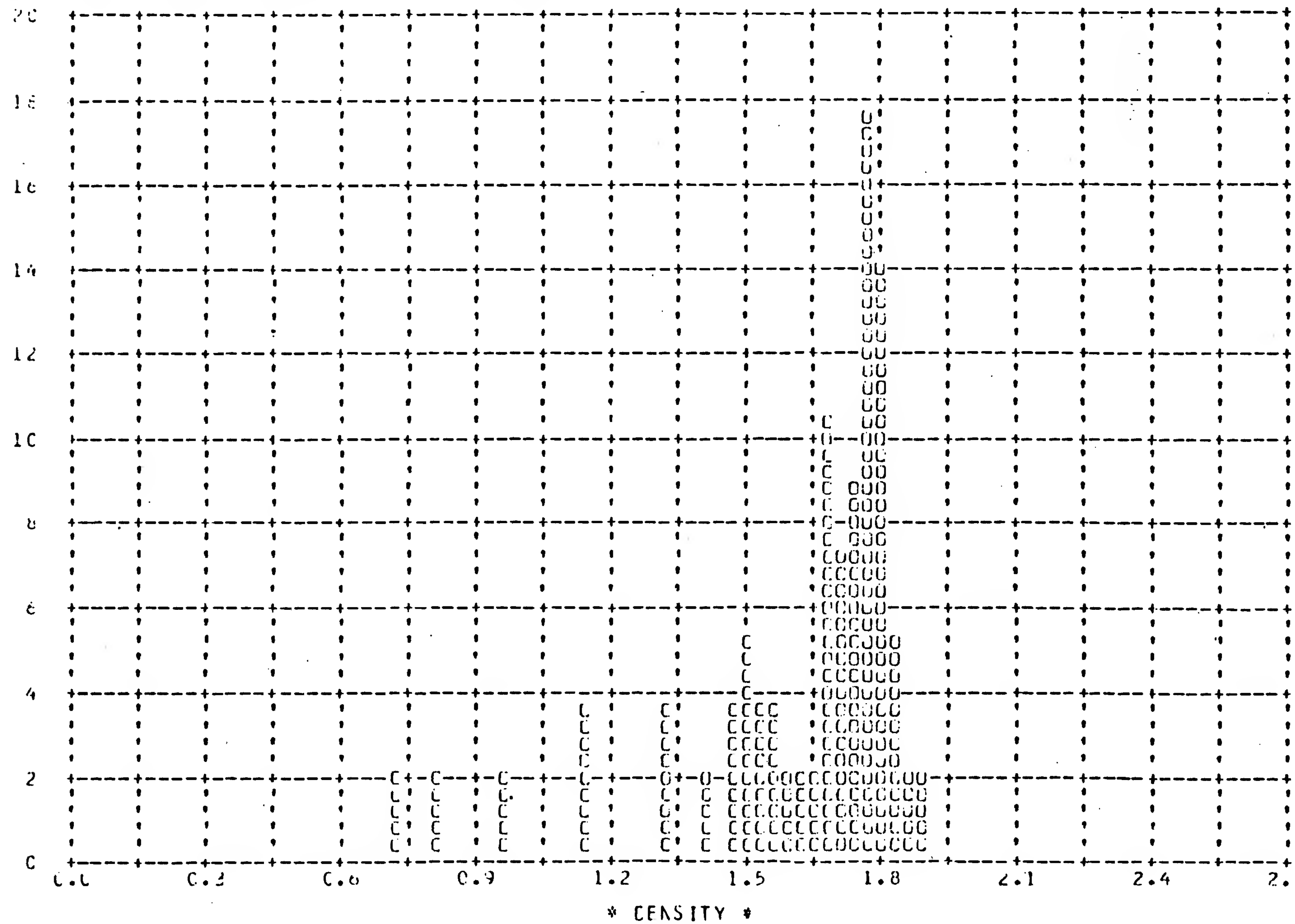

FIGURE A-2

~~TOP SECRET~~ C [redacted]

MISSION * 1044-2 * INSTR * FWD * 1/16/68 PLOT OF D MIN * TERRAIN * PROCESSING * INTERMEDIATE
ARITH MEAN * 0.86 * MEDIAN * 0.96 * STD DEV * 0.16 * RANGE * 0.55 TO 1.07 WITH 12 SAMPLES

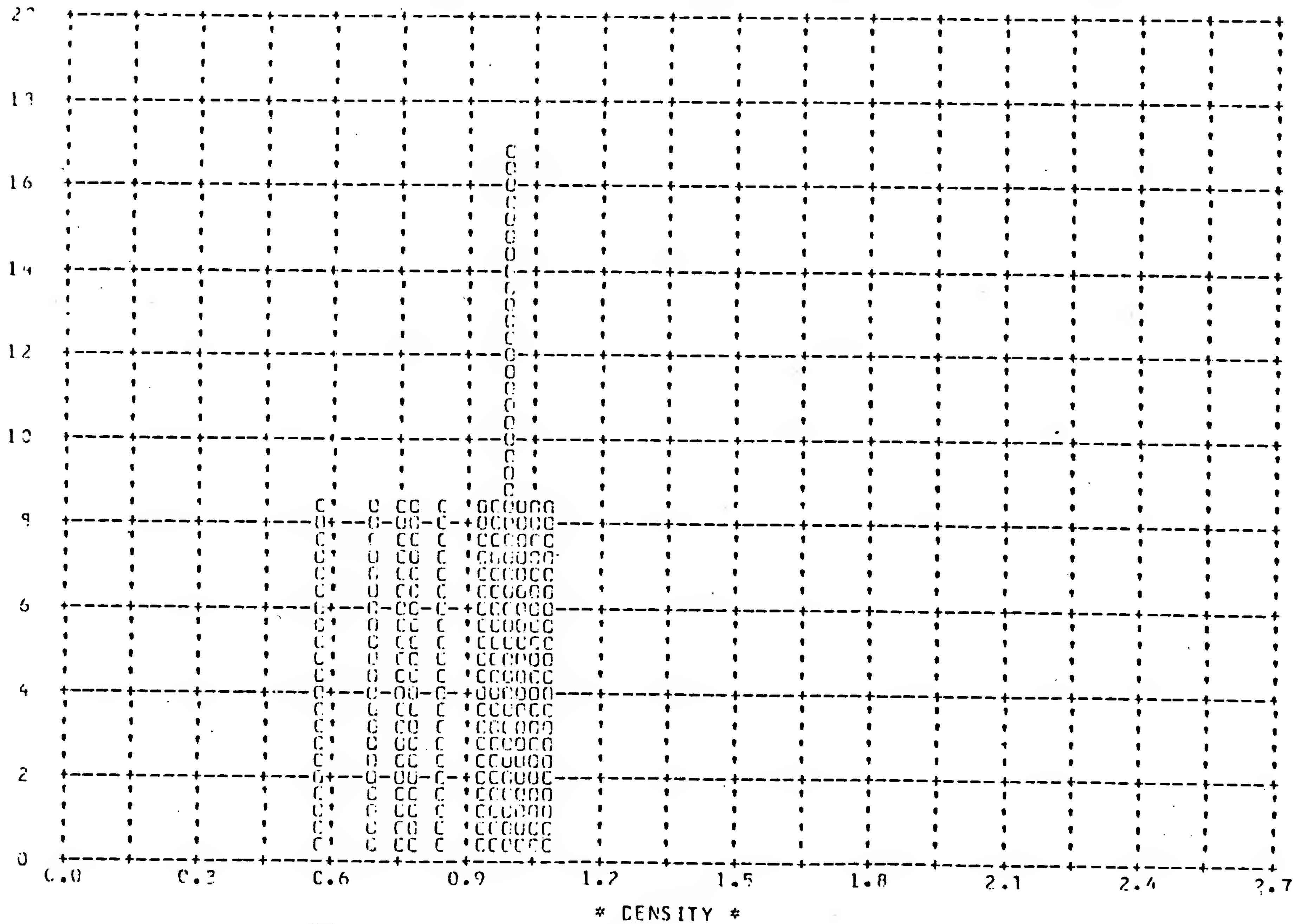

FIGURE A-3

MISSION * 1044-2 * INSTR * FWD * 1/16/69 PLOT OF D MAX * TERRAIN * PROCESSING * INTERMEDIATE

ARITH MEAN * 1.77 * MEDIAN * 1.77 * STD DEV * 0.19 * RANGE * 1.51 TO 2.19 WITH 12 SAMPLES

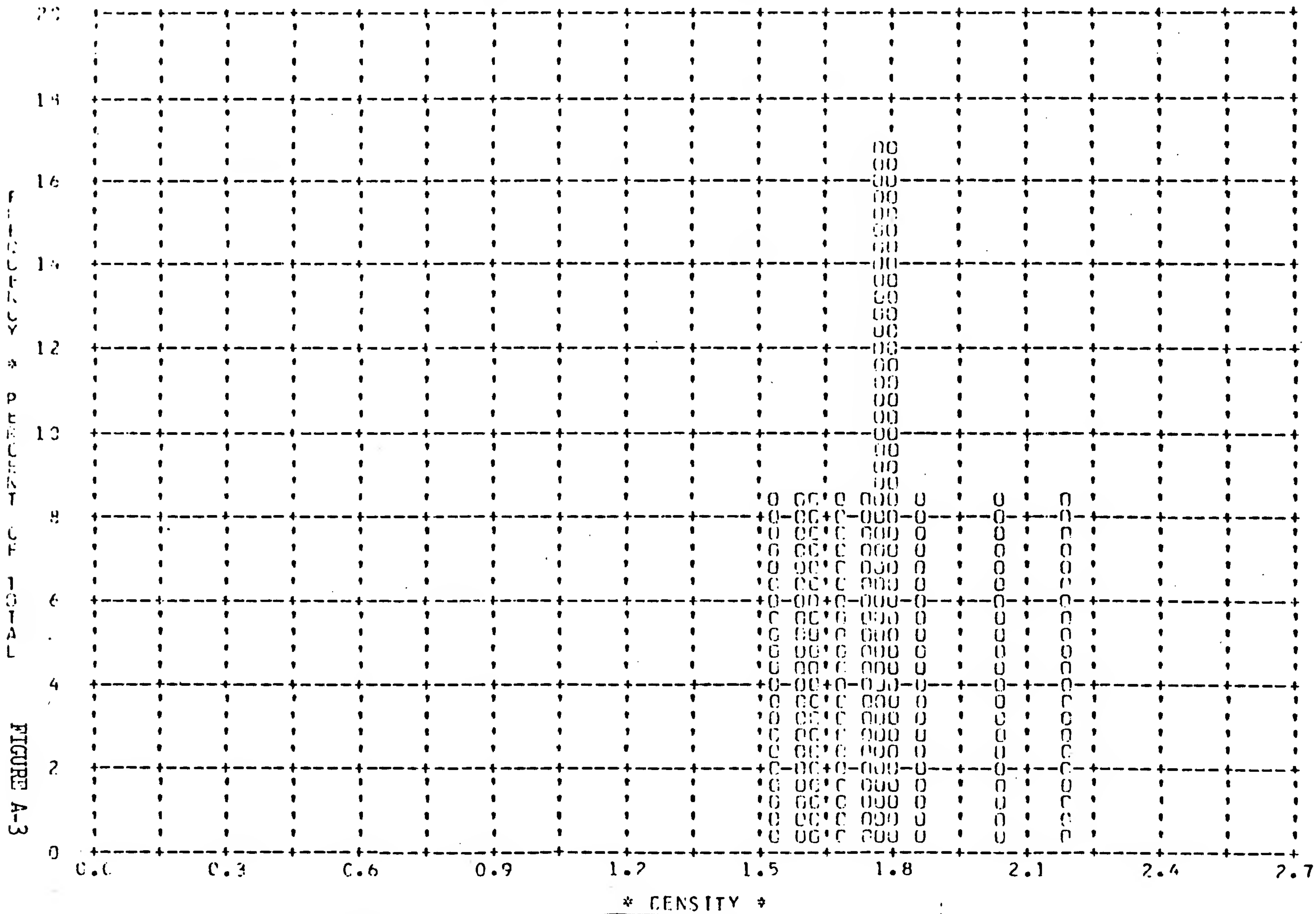

FIGURE A-3

S 1 [redacted]

MISSION * 1044-2 * INSTR * FWD * 1/16/68 PLOT OF D MAX * CLOUD * PROCESSING * INTERMEDIATE

ARITH MEAN * 2.09 * MEDIAN * 2.23 * STD DEV * 0.26 * RANGE * 1.65 TO 2.37 WITH 8 SAMPLES

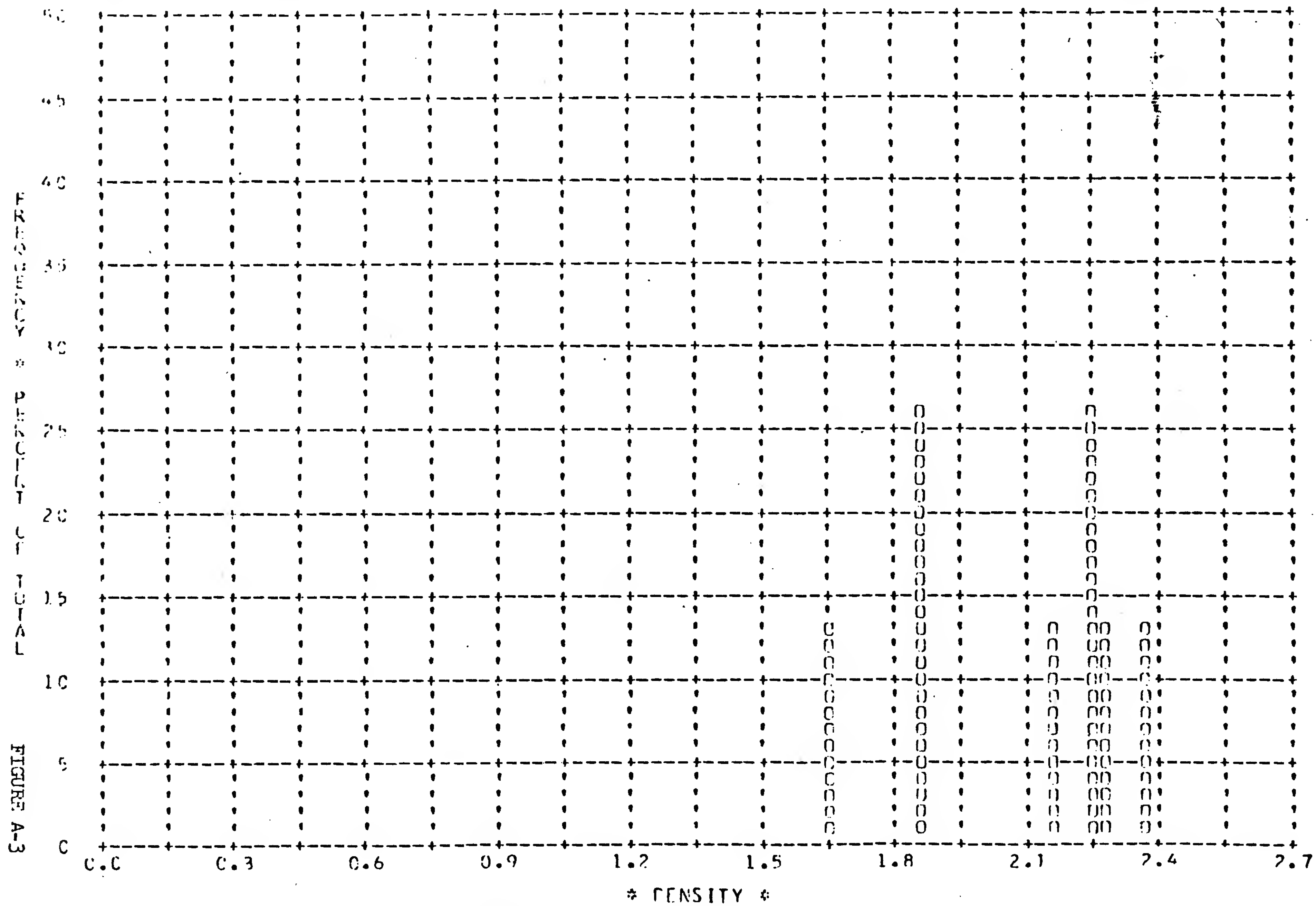

FIGURE A-3

~~TOP SECRET~~ C[redacted]

~~TOP SECRET~~ [redacted]

MISSION * 1044-2 * INSTR * FWD * 1/16/68 PLOT OF D MIN * TERRAIN * PROCESSING * FULL

ARITH MEAN * 0.50 * MEDIAN * 0.47 * STD DEV * 0.21 * RANGE * 0.20 TO 1.32 WITH 168 SAMPLES

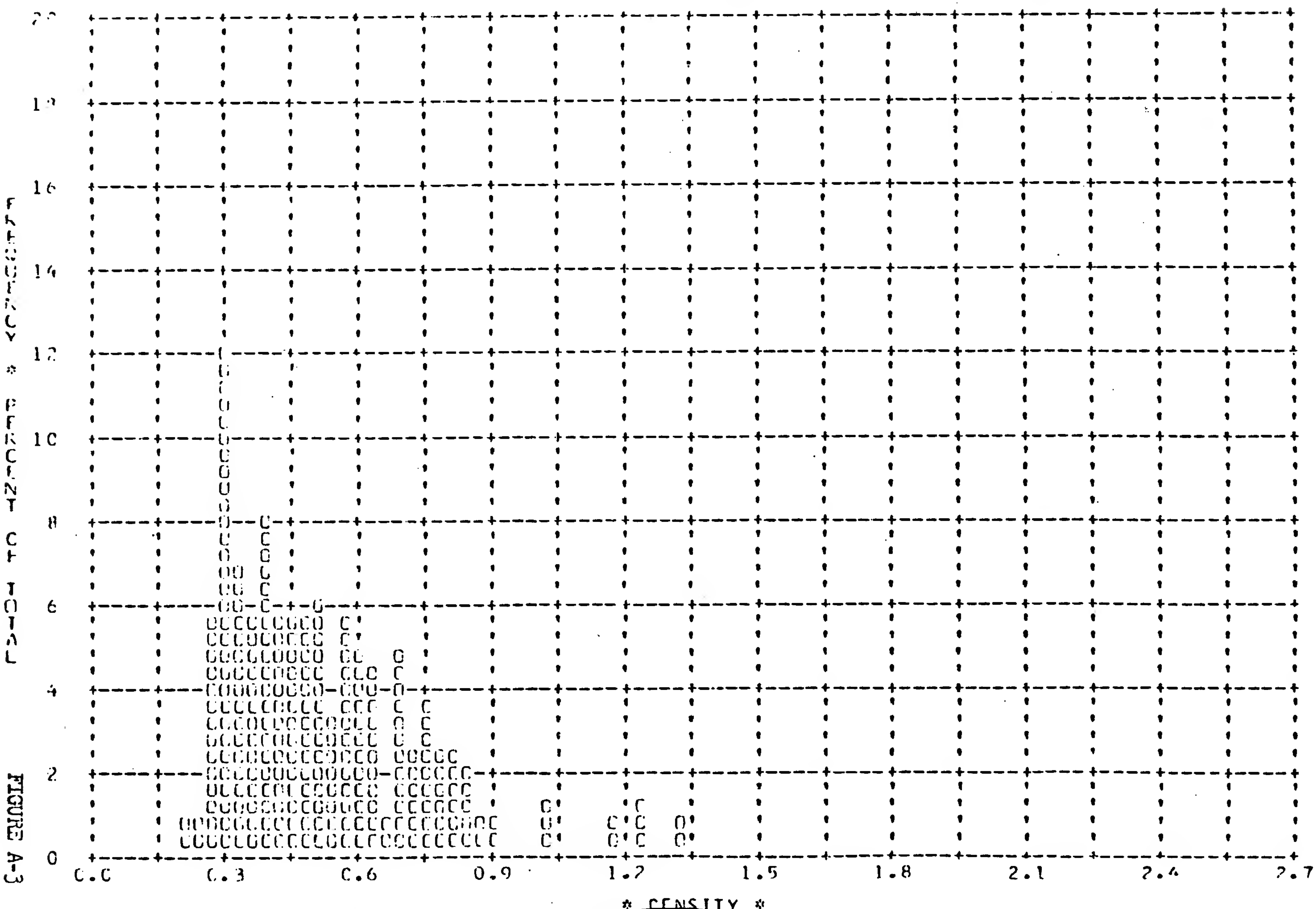

FIGURE A-3

~~TOP SECRET~~ C [redacted]

MISSION * 1044-2 * INSTR * FWD * 1/16/68 PLOT OF D MAX * TERRAIN * PROCESSING * FULL

ARITH MEAN * 1.52 * MEDIAN * 1.53 * STD DEV * 0.42 * RANGE * 0.49 TO 2.37 WITH 168 SAMPLES

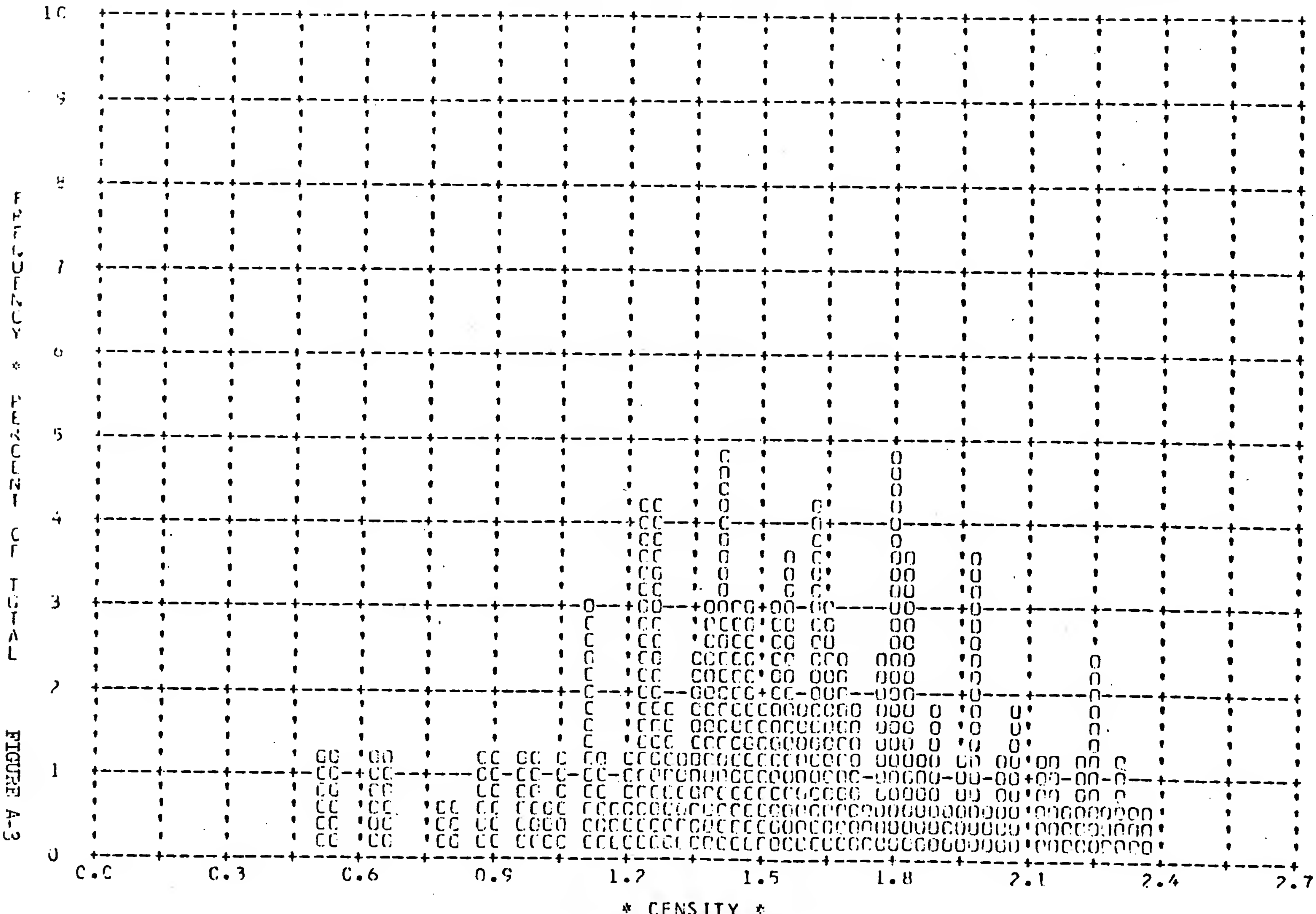

FIGURE A-3

[redacted]

MISSION * 1044-2 * INSTR * FWD * 1/16/68 PLOT OF D MAX * CLOUD * PROCESSING * FULL

ARITH MEAN * 2.06 * MEDIAN * 2.24 * STD DEV * 0.41 * RANGE * 0.76 TO 2.49 WITH 162 SAMPLES

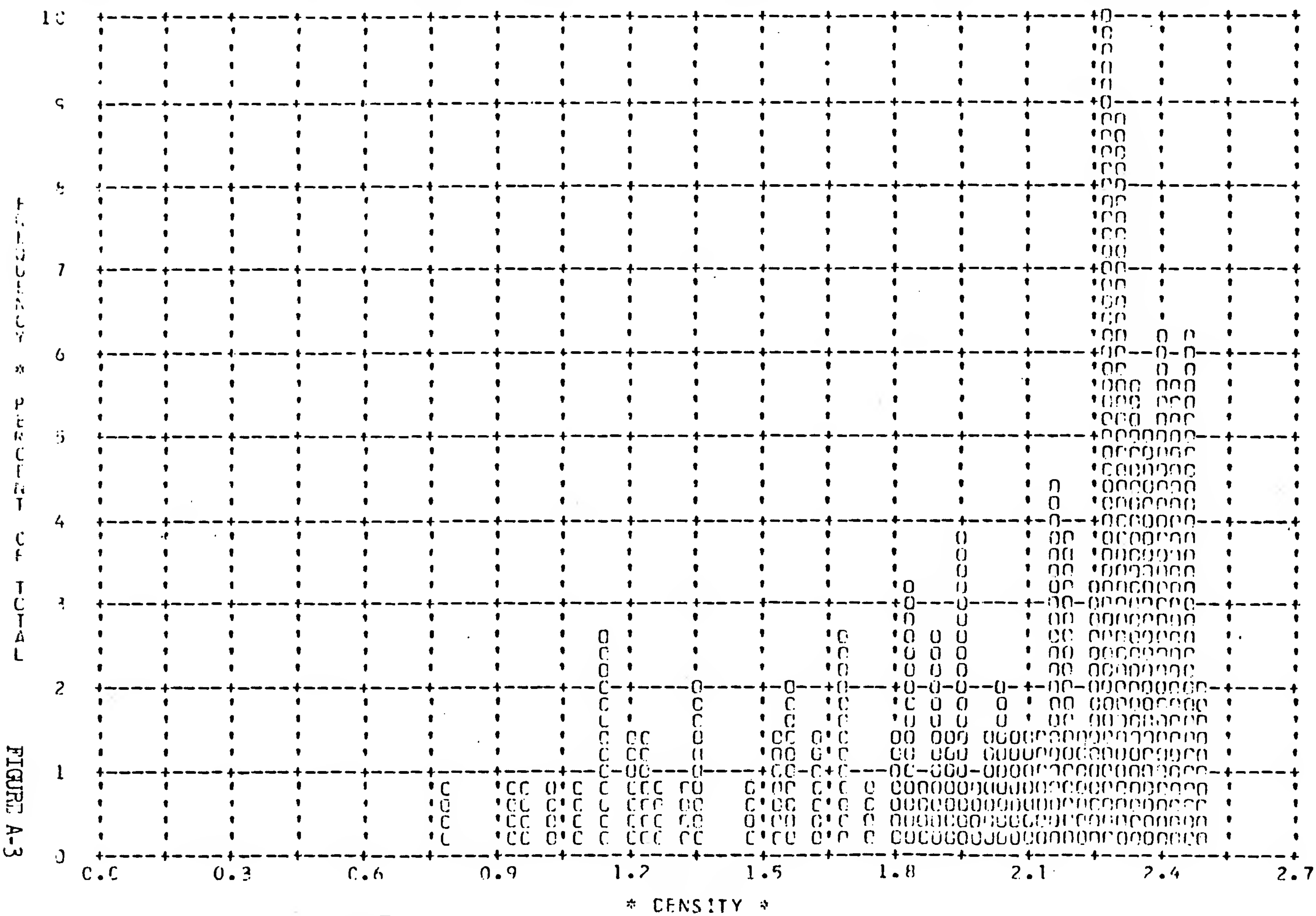

FIGURE A-3

~~TOP SECRET~~ C [redacted]

MISSION * 1044-2 * INSTR * FWD * 1/16/68 PLOT OF D MIN * TERRAIN * PROCESSING * ALL LEVELS

ARITH MEAN * 0.53 * MEDIAN * 0.49 * STD DEV * 0.23 * RANGE * 0.20 TO 1.32 WITH 180 SAMPLES

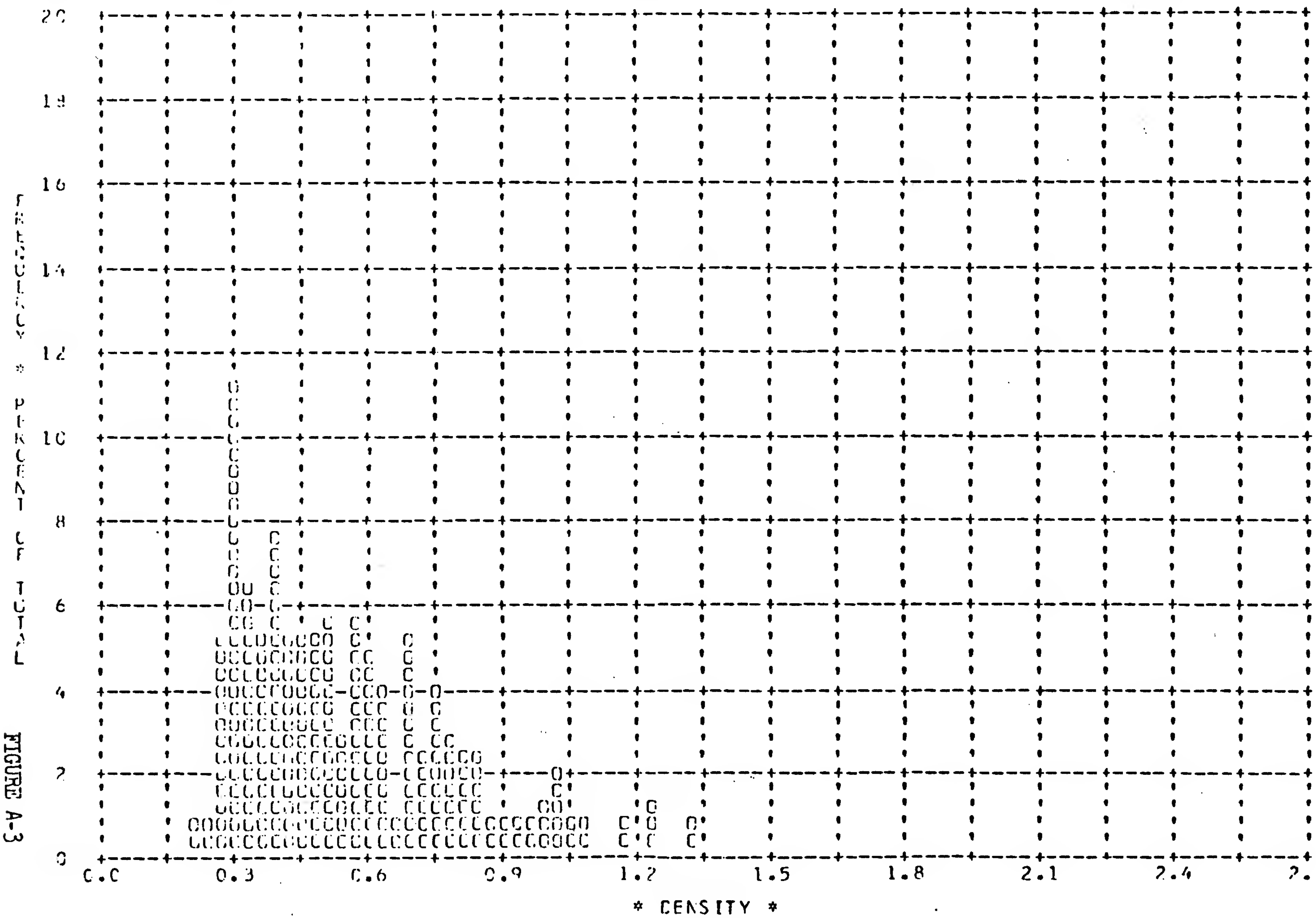

FIGURE A-3

MISSION * 1044-2 * INSTR * FWD * 1/16/68 PLOT OF D MAX * TERRAIN * PROCESSING * ALL LEVELS

ARITH MEAN * 1.54 * MEDIAN * 1.55 * STD DEV * 0.41 * RANGE * 0.49 TO 2.37 WITH 180 SAMPLES

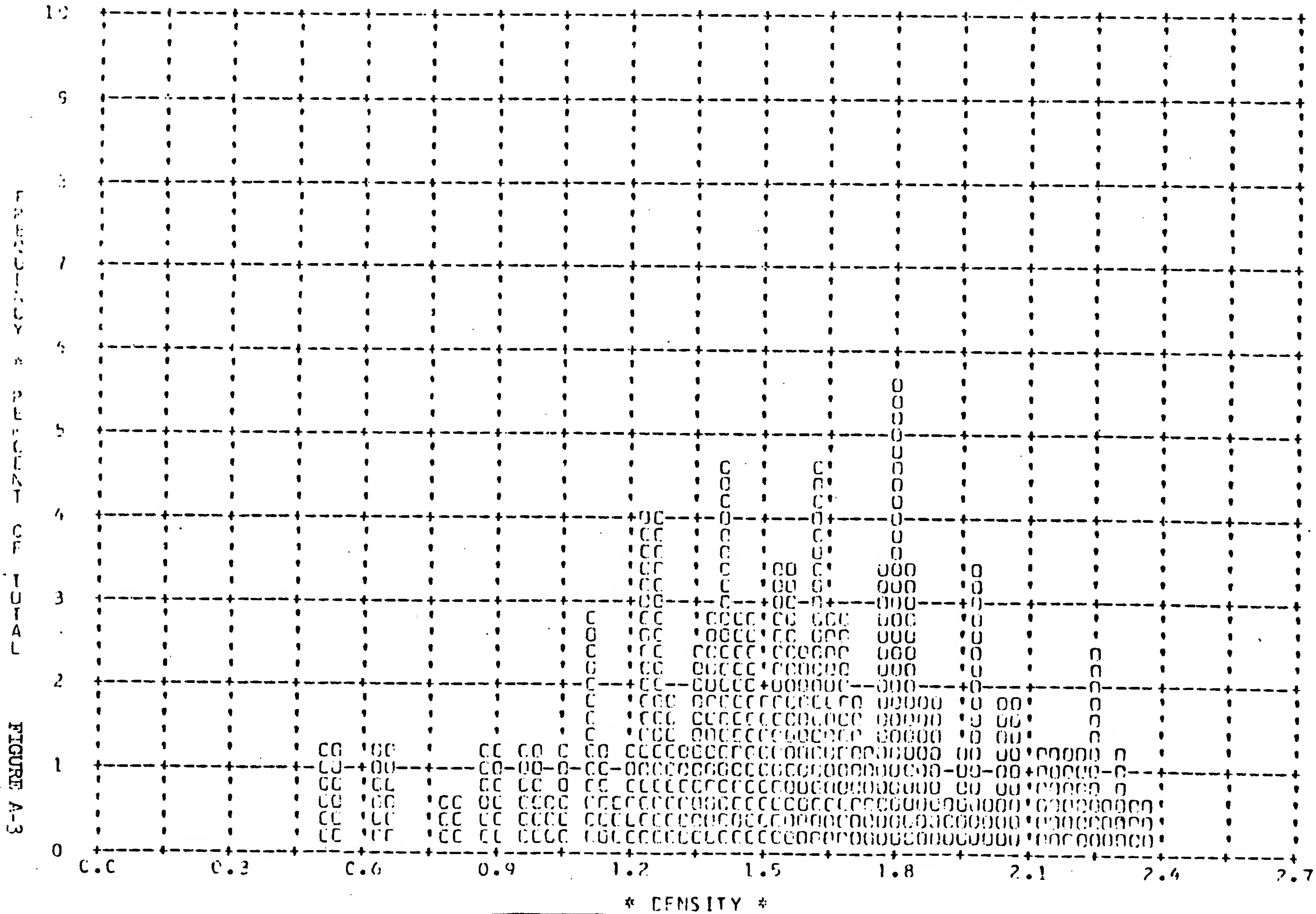

FIGURE A-3

MISSION * 1044-2 * INSTR * FWD * 1/16/68 PLOT OF D MAX * CLOUD * PROCESSING * ALL LEVELS

ARITH MEAN * 2.06 * MEDIAN * 2.23 * STD DEV * 0.40 * RANGE * 0.76 TO 2.49 WITH 170 SAMPLES

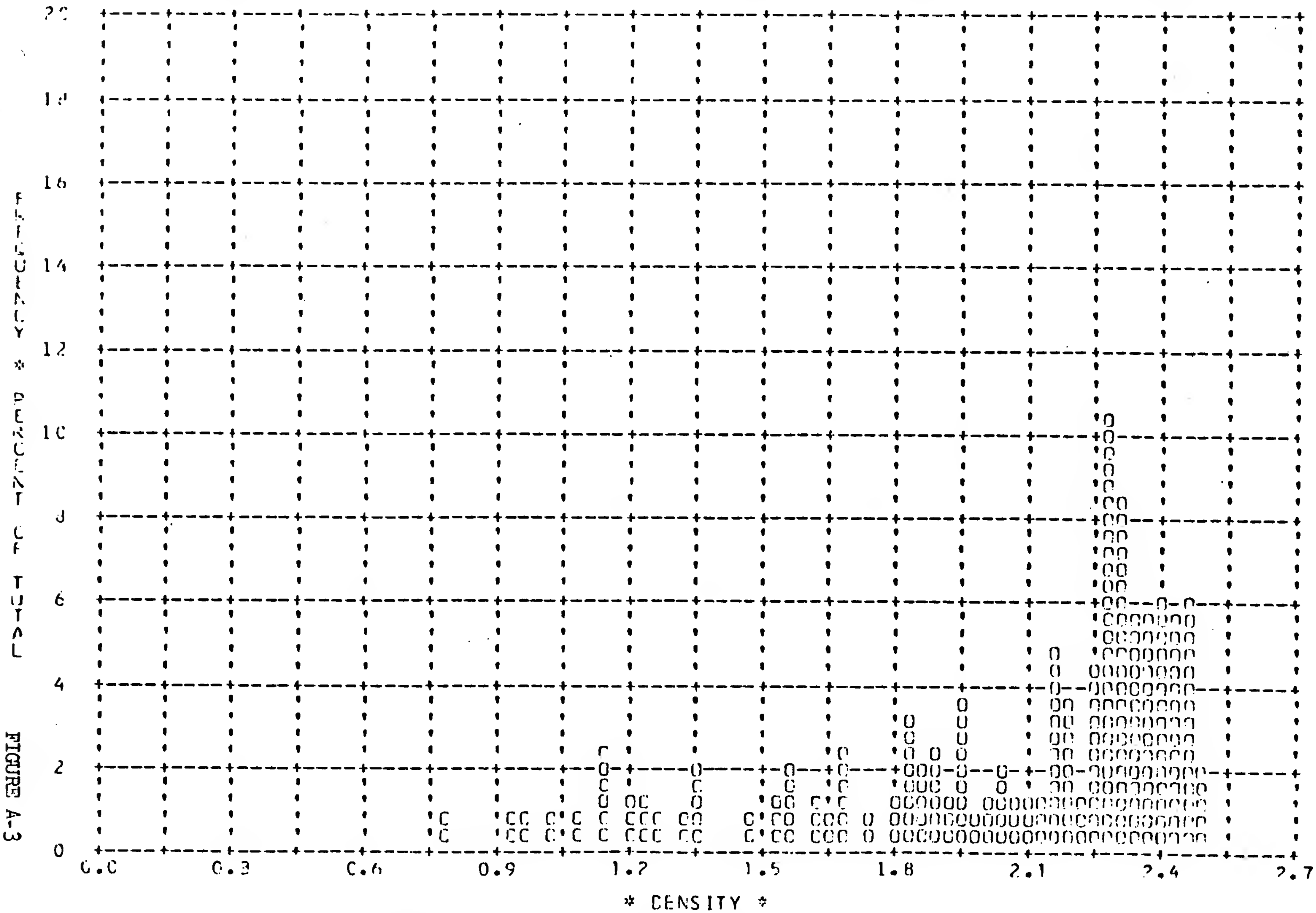

FIGURE A-3

TOP SECRET C [redacted]

MISSION * 1049-2 * INSTR * FWD * 1/16/69 PLOT OF D MIN * TERRAIN * PROCESSING * DUAL GAMMA

ARITH MEAN * 0.47 * MEDIAN * 0.38 * STD DEV * 0.21 * RANGE * 0.26 TO 1.11 WITH 73 SAMPLES

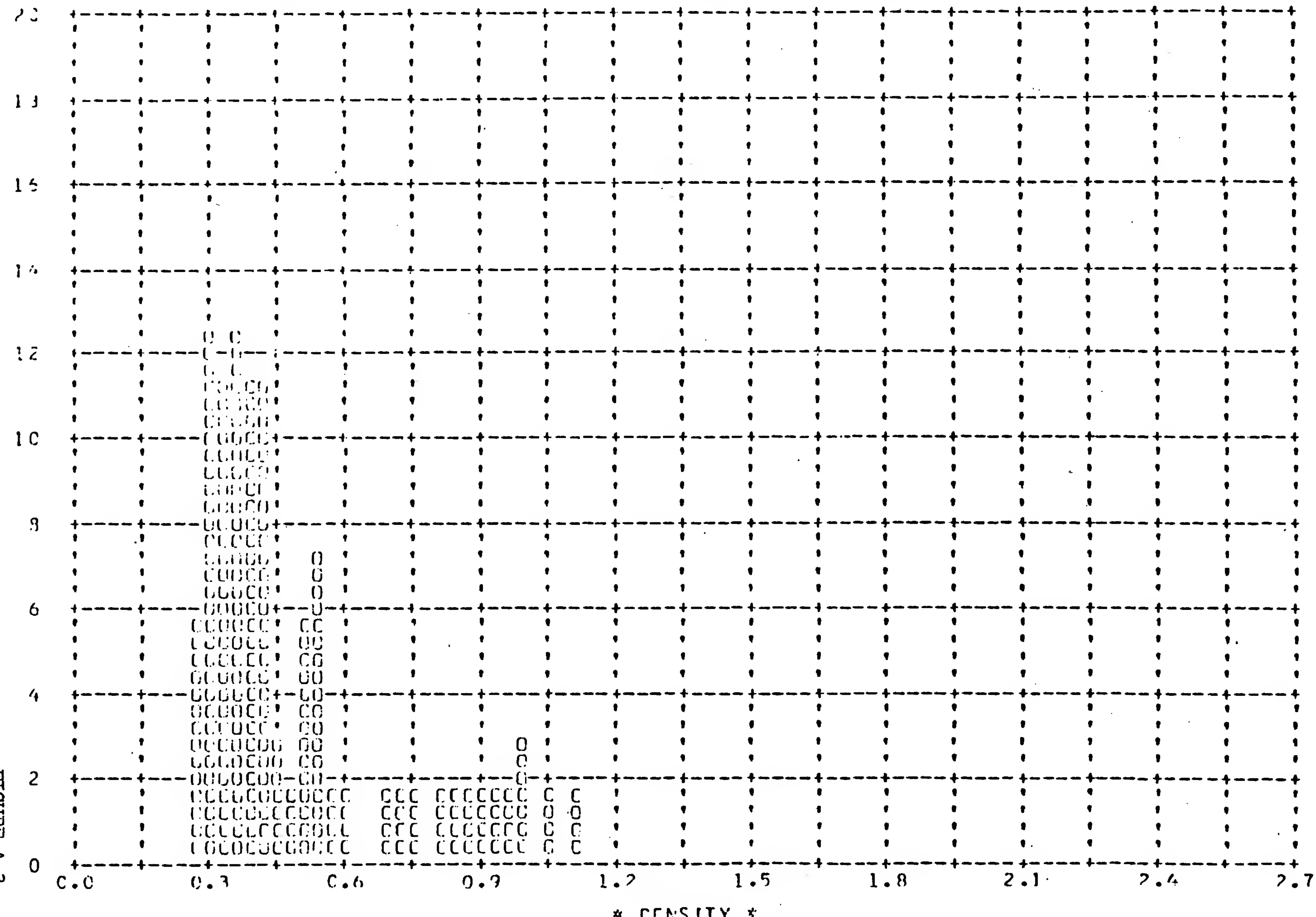

FIGURE A-3

~~TOP SECRET~~ C [redacted]

MISSION * 1044-2 * INSTR * FWD * 1/16/68 PLOT OF D MAX * TERRAIN * PROCESSING * DUAL GAMMA

ARITH MEAN * 1.32 * MEDIAN * 1.37 * STD DEV * 0.32 * RANGE * 0.40 TO 1.81 WITH 73 SAMPLES

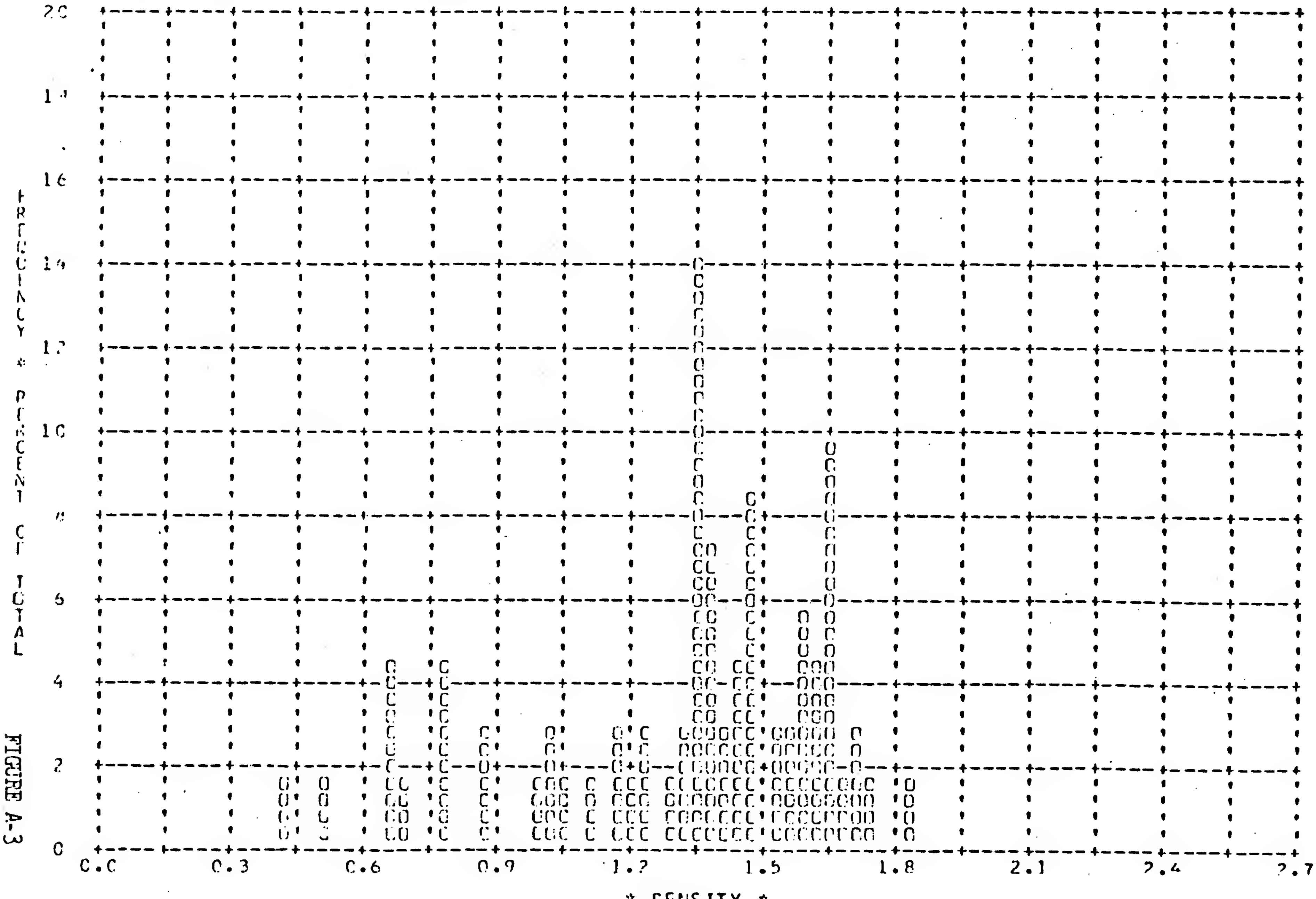

FIGURE A-3

MISSION * 1044-2 * INSTR * FWD * 1/16/68 PLOT OF D MAX * CLOUD * PROCESSING * DUAL GAMMA

ARITH MEAN * 1.57 * MEDIAN * 1.64 * STD DEV * 0.22 * RANGE * 0.82 TO 1.86 WITH 63 SAMPLES

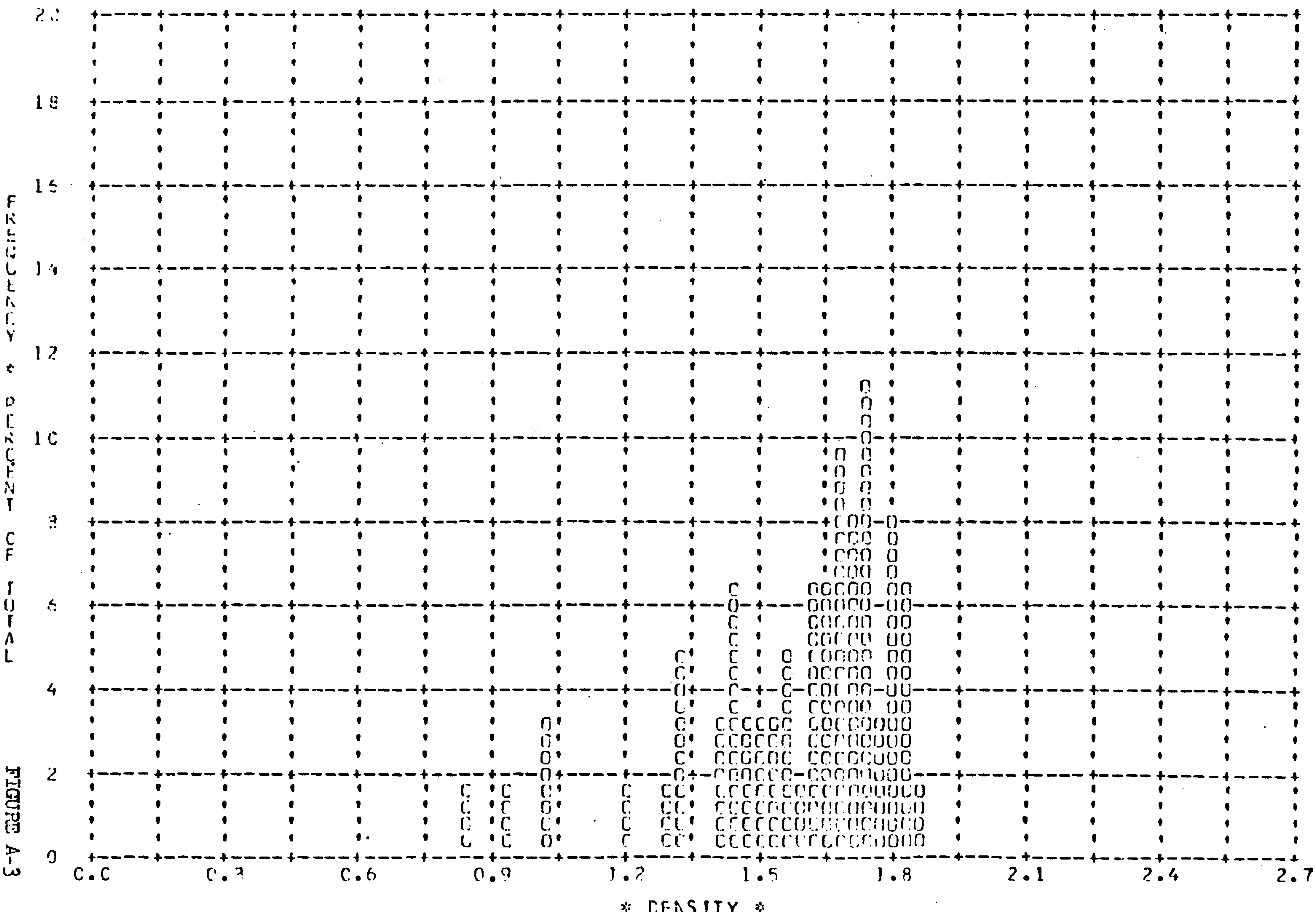

FIGURE A-3

MISSION * 1044-2 * INSTR * AFT * 1/16/68 PLOT OF D MIN * TERRAIN * PROCESSING * INTERMEDIATE

ARITH MEAN * 0.58 * MEDIAN * 0.54 * STD DEV * 0.26 * RANGE * 0.22 TO 1.31 WITH 46 SAMPLES

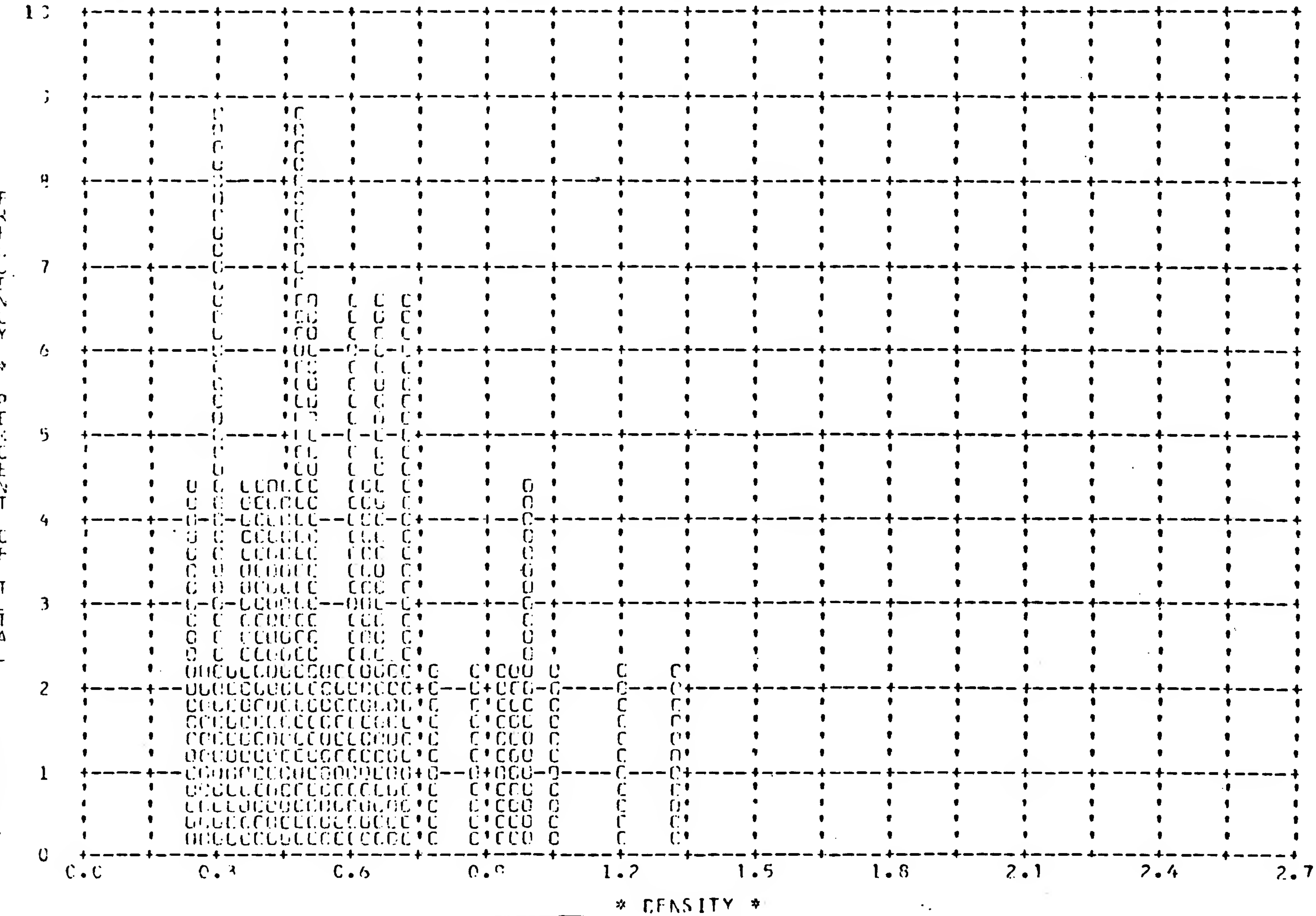

FIGURE A-4

~~TOP SECRET~~ C [redacted]

MISSION * 1044-2 * INSTR * AFT * 1/16/69 PLOT OF D MAX * TERRAIN * PROCESSING * INTERMEDIATE

ARITH MEAN * 1.45 * MEDIAN * 1.43 * STD DEV * 0.36 * RANGE * 0.52 TO 2.07 WITH 46 SAMPLES

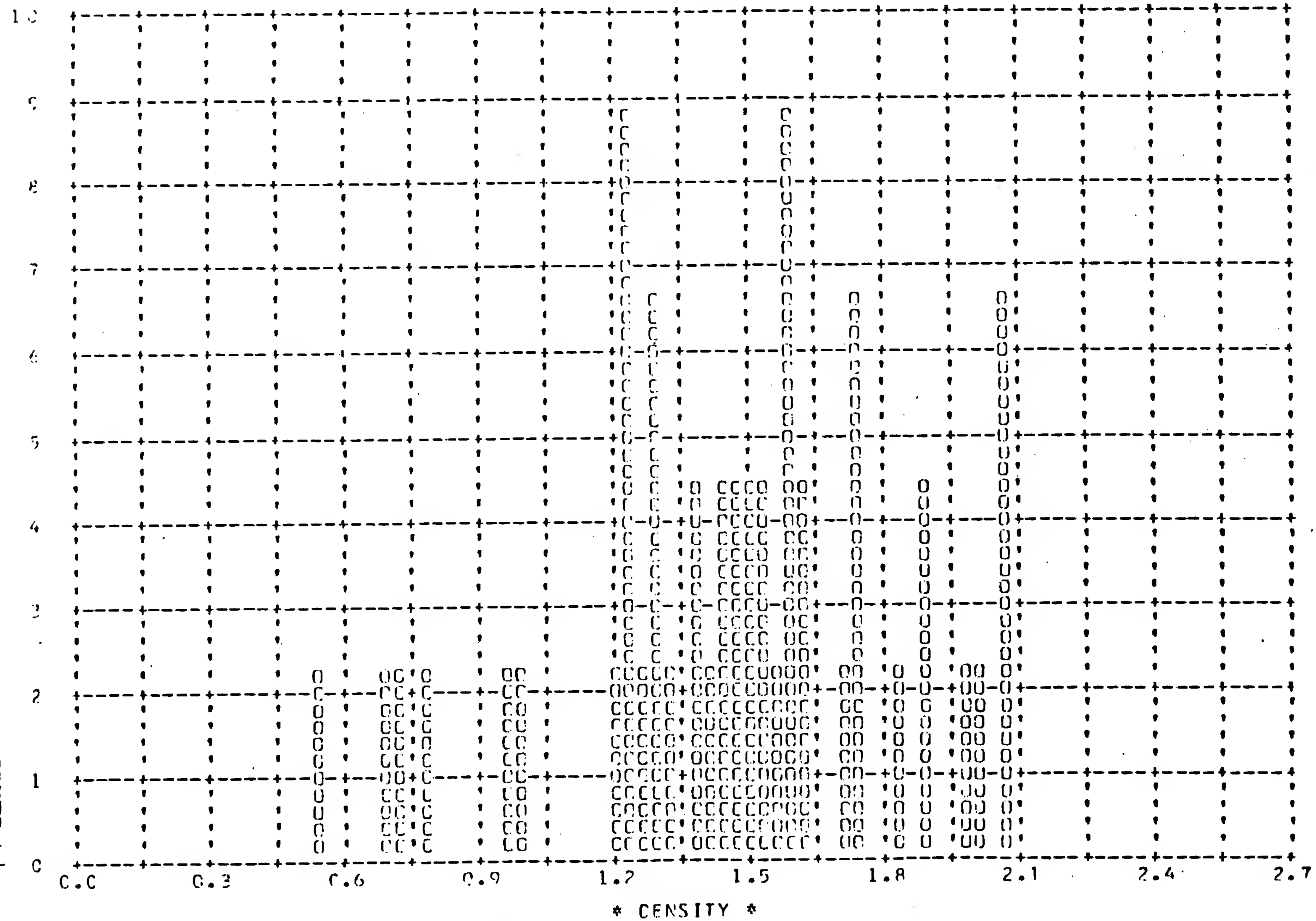

FIGURE A-4

~~TOP SECRET~~ C [redacted]

SI I C [redacted]

MISSION * 1044-2 * INSTR * AFT * 1/16/68 PLOT OF D MAX * CLOUD * PROCESSING * INTERMEDIATE

ARITH MEAN * 2.10 * MEDIAN * 2.22 * STD DEV * 0.47 * RANGE * 0.44 TO 2.54 WITH 35 SAMPLES

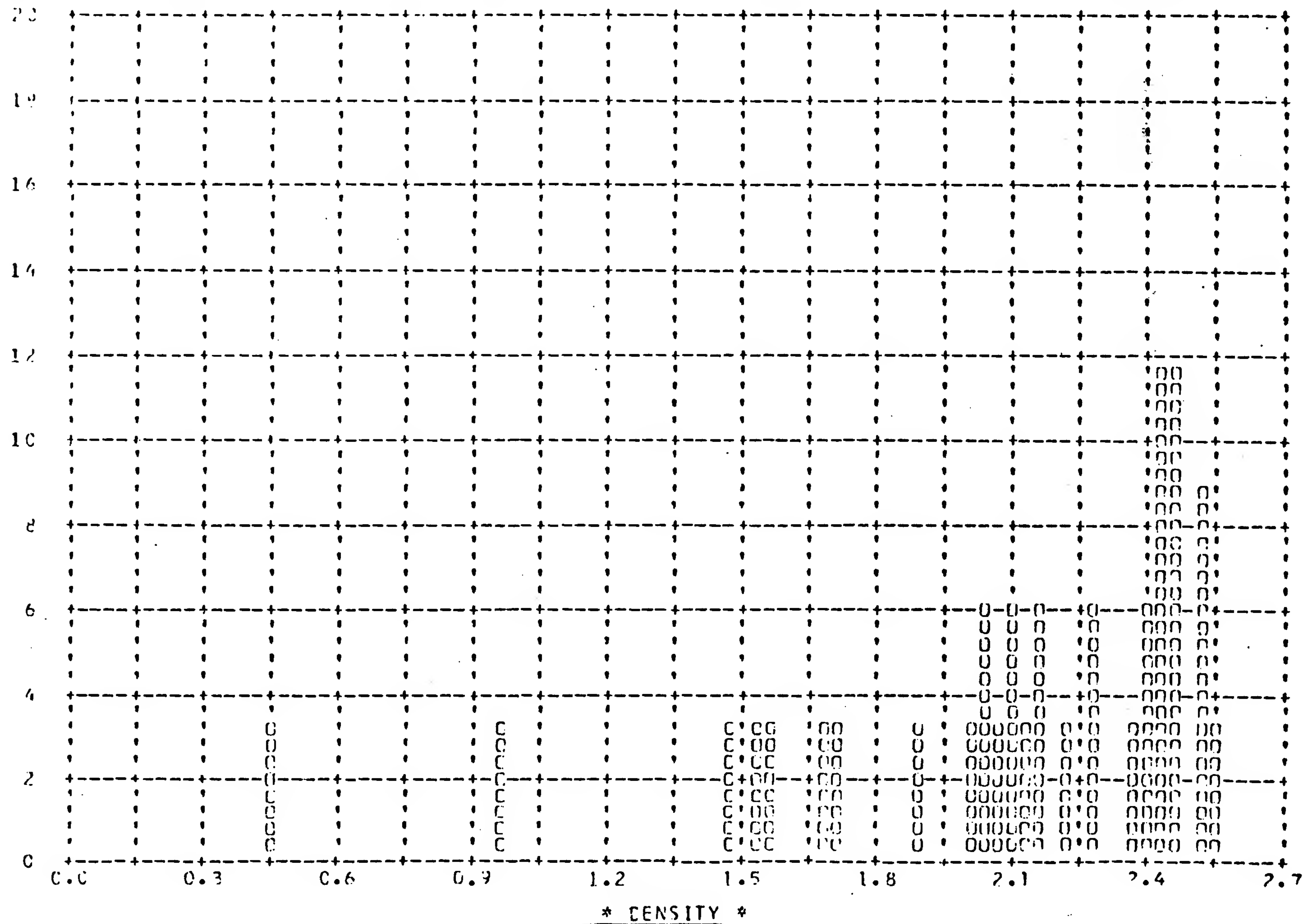

FIGURE A-4

~~TOP SECRET~~ C [redacted]

MISSION * 1044-2 * INSTR * AFT * 1/16/68 PLOT OF D MIN * TERRAIN * PROCESSING * FULL

ARITH MEAN * 0.51 * MEDIAN * 0.46 * STD DEV * 0.18 * RANGE * 0.25 TO 1.08 WITH 116 SAMPLES

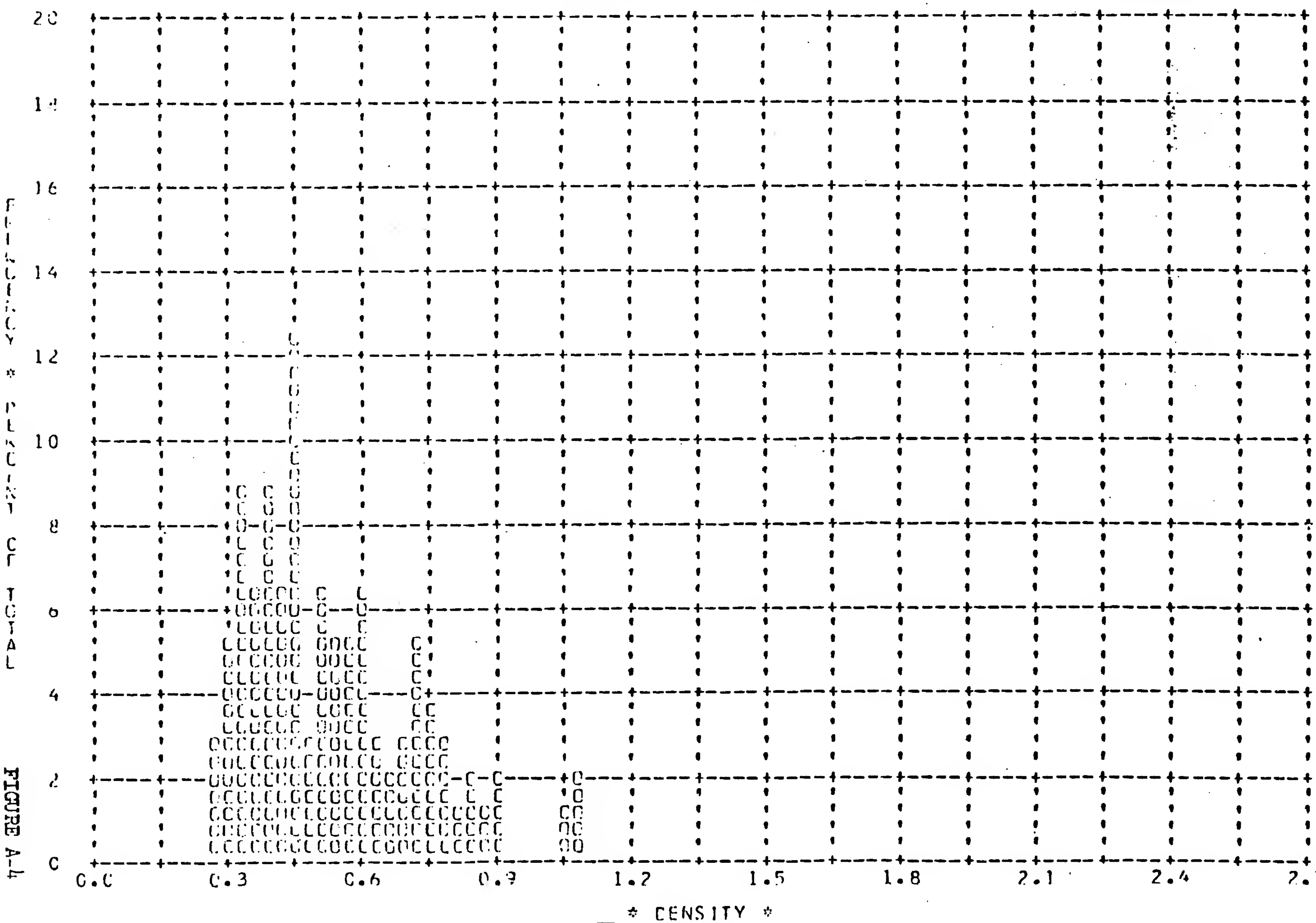

FIGURE A-4

MISSION * 1044-2 * INSTR * AFT * 1/16/68 PLOT OF D MAX * TERRAIN * PROCESSING * FULL

ARITH MEAN * 1.59 * MEDIAN * 1.61 * STD DEV * 0.44 * RANGE * 0.50 TO 2.48 WITH 116 SAMPLES

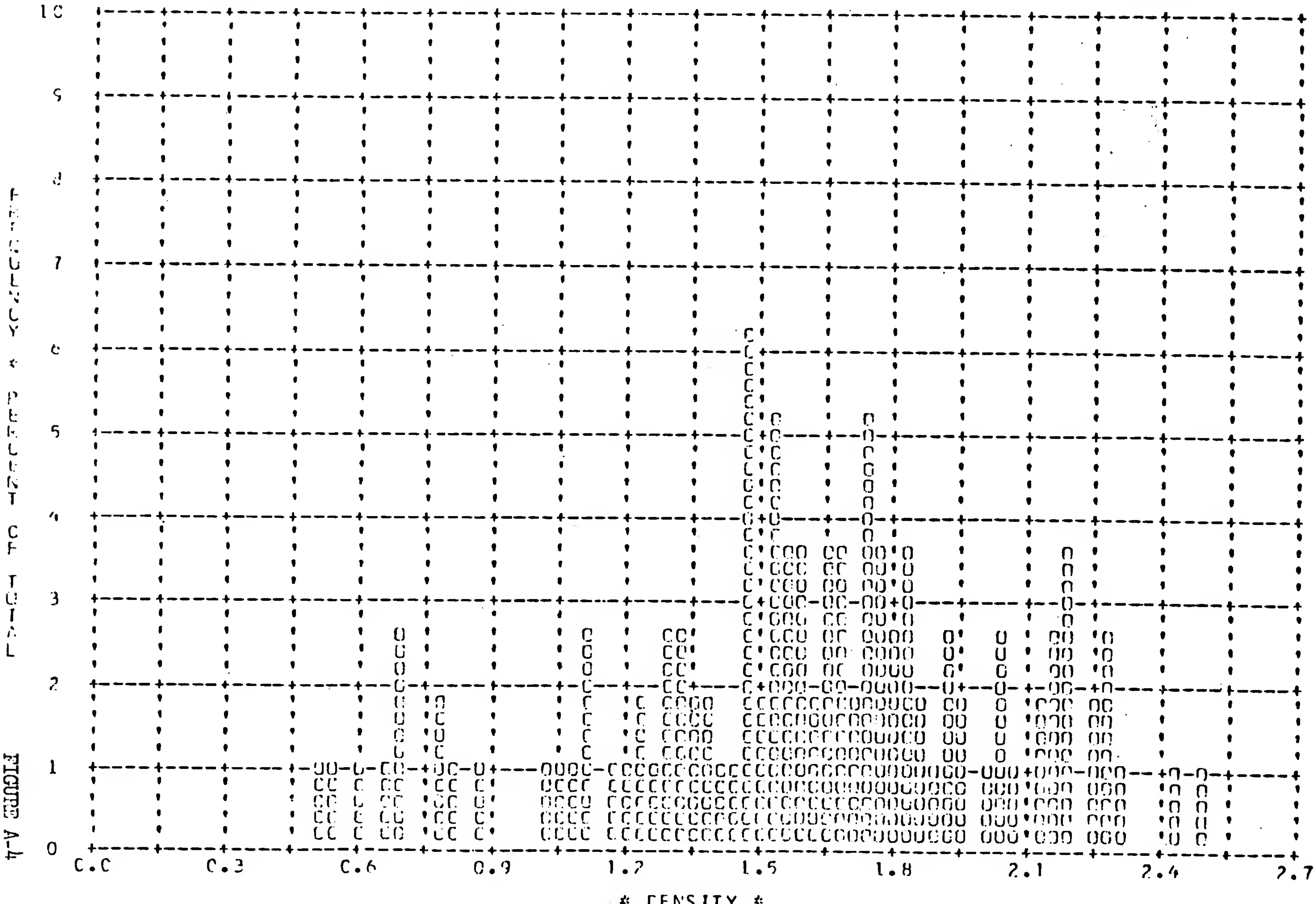

FIGURE A-4

MISSION * 1044-2 * INSTR * AFT * 1/16/68 PLOT OF D MAX * CLOUD * PROCESSING * FULL

ARITH MEAN * 2.04 * MEDIAN * 2.12 * STD DEV * 0.42 * RANGE * 0.91 TO 2.55 WITH 93 SAMPLES

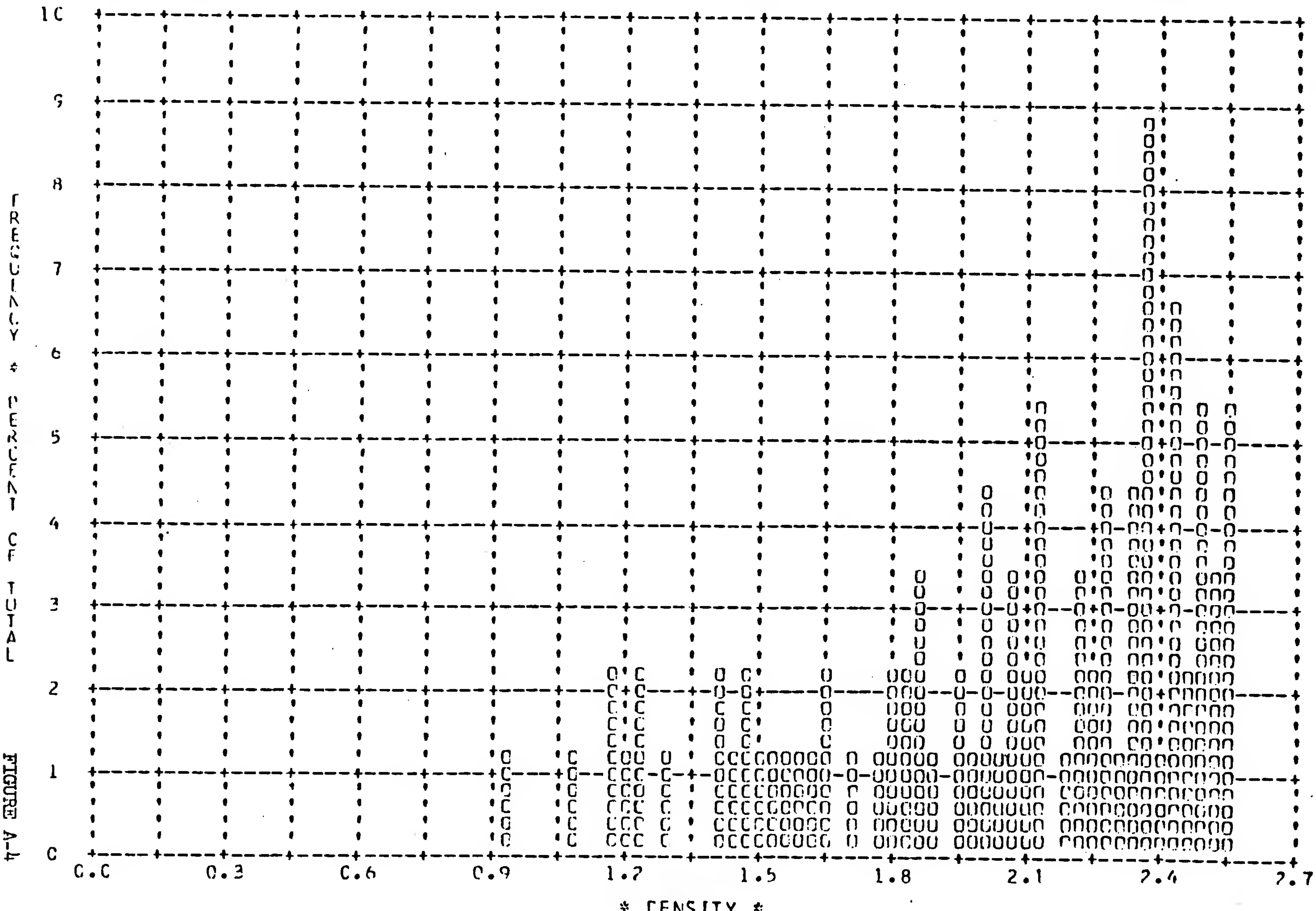

FIGURE A-4

MISSION * 1044-2 * INSTR * AFT * 1/16/69 PLOT OF D MIN * TERRAIN * PROCESSING * ALL LEVELS

ARITH MEAN * 0.53 * MEDIAN * 0.49 * STD DEV * 0.21 * RANGE * 0.22 TO 1.31 WITH 162 SAMPLES

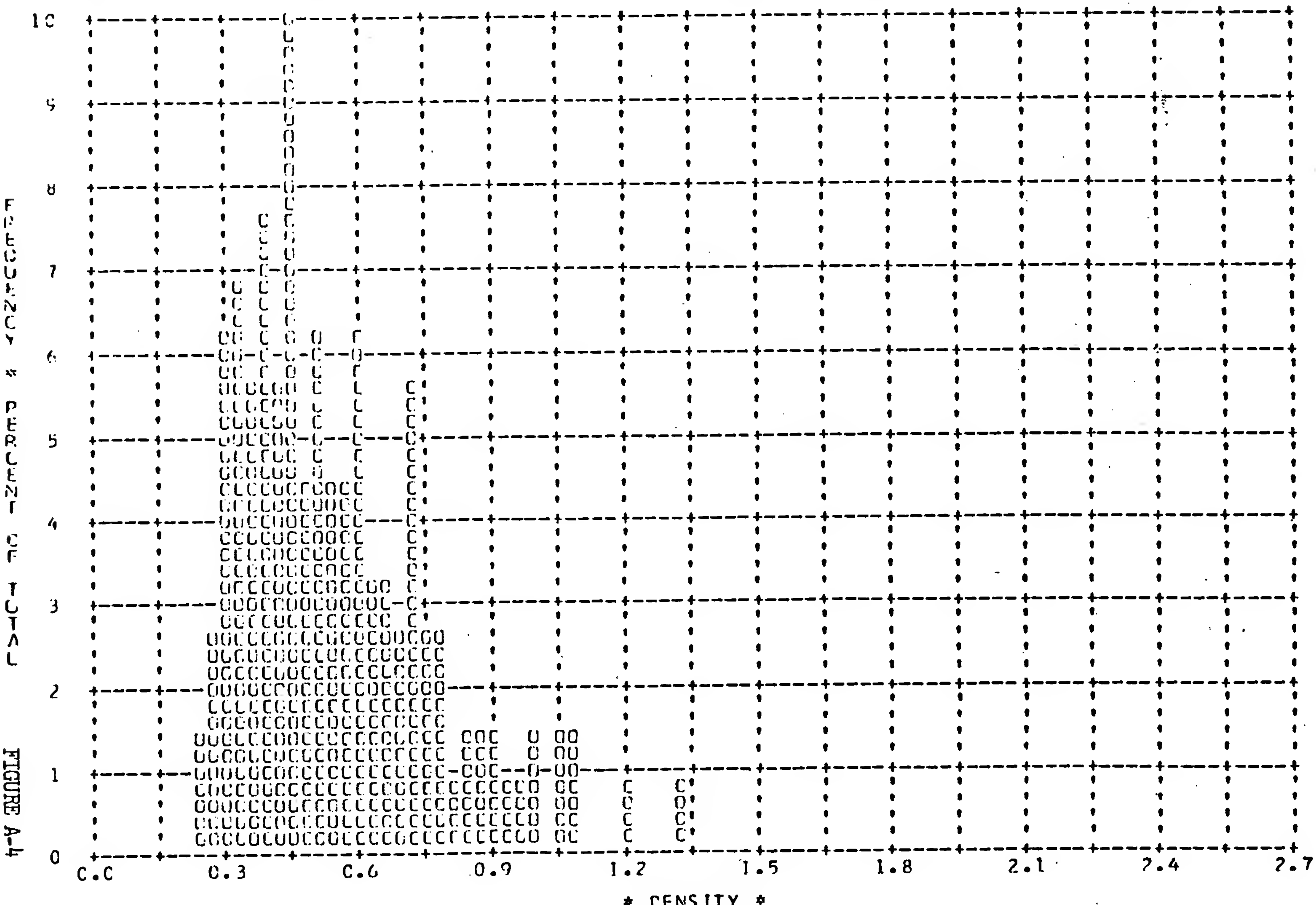

FIGURE A-4

~~TOP SECRET C~~[redacted]

MISSION * 1044-2 * INSTR * AFT * 1/16/68 PLOT OF D MAX * TERRAIN * PROCESSING * ALL LEVELS

ARITH MEAN * 1.55 * MEDIAN * 1.57 * STD DEV * 0.42 * RANGE * 0.50 TO 2.48 WITH 162 SAMPLES

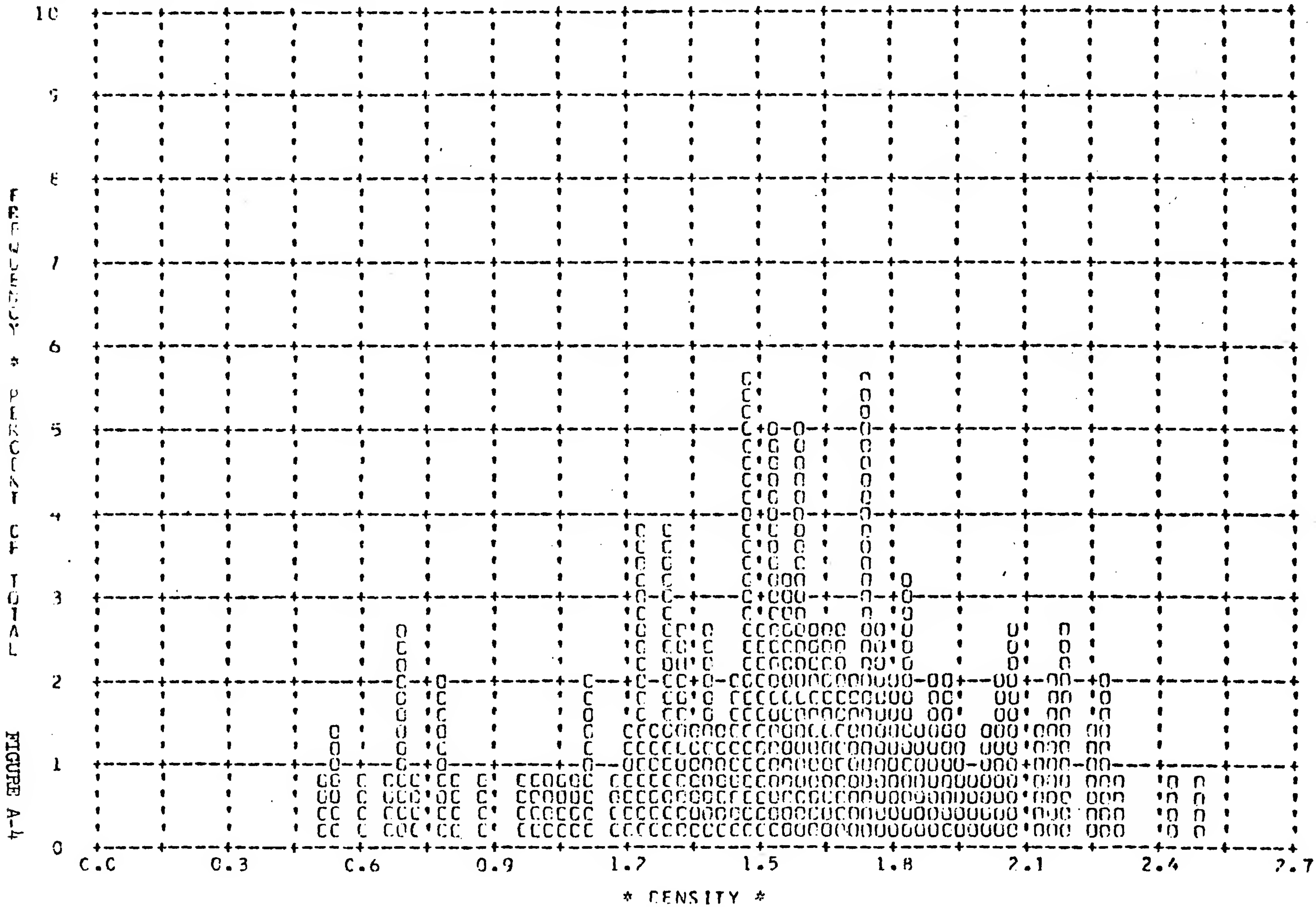

FIGURE A-4

~~Top Secret~~ C[redacted]

MISSION * 1044-2 * INSTR * AFT * 1/16/68 PLOT OF D MAX * CLOUD * PROCESSING * ALL LEVELS

ARITH MEAN * 2.05 * MEDIAN * 2.16 * STD DEV * 0.43 * RANGE * 0.44 TO 2.55 WITH 128 SAMPLES

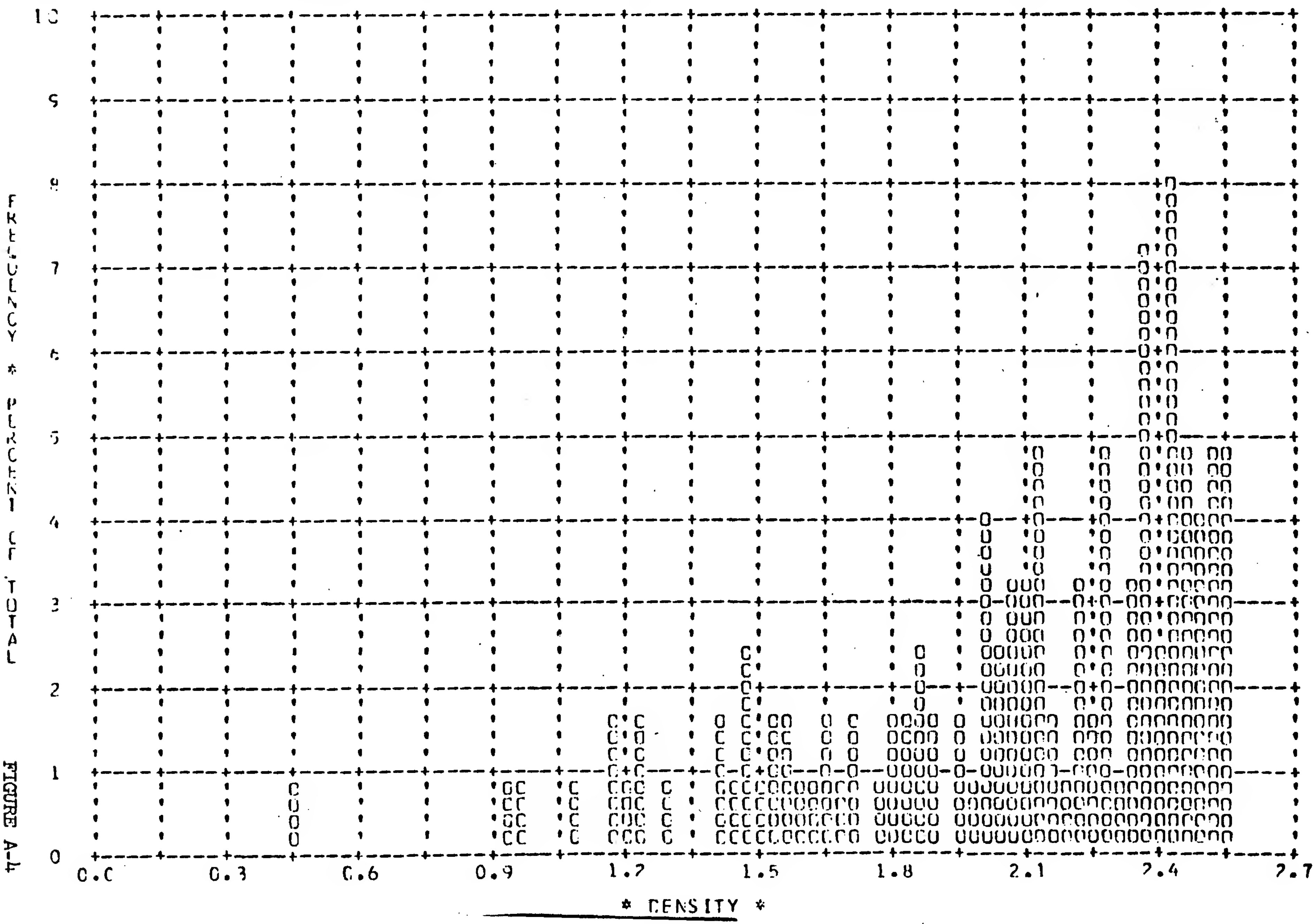

FIGURE A-4

MISSION * 1044-2 * INSTR * AFT * 1/16/68 PLOT OF D MIN * TERRAIN * PROCESSING * DUAL GAMMA

ARITH MEAN * 0.56 * MEDIAN * 0.53 * STD DEV * 0.22 * RANGE * 0.27 TO 1.25 WITH 84 SAMPLES

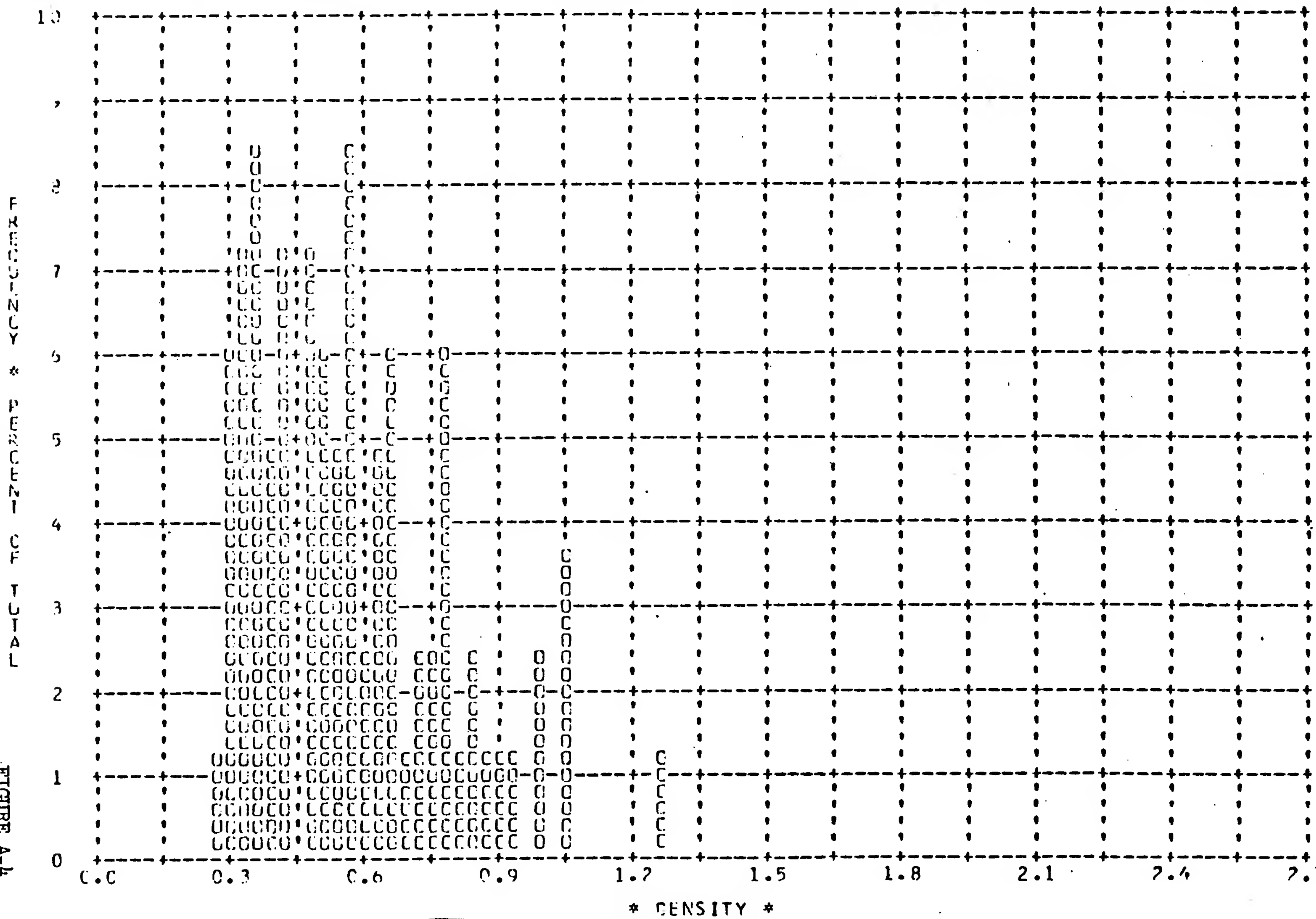

FIGURE A-4

MISSION * 1044-2 * INSTR * AFT * 1/16/68 PLOT OF D MAX * TERRAIN * PROCESSING * DUAL GAMMA

ARITH MEAN * 1.36 * MEDIAN * 1.41 * STD DEV * 0.29 * RANGE * 0.54 TO 1.83 WITH 84 SAMPLES

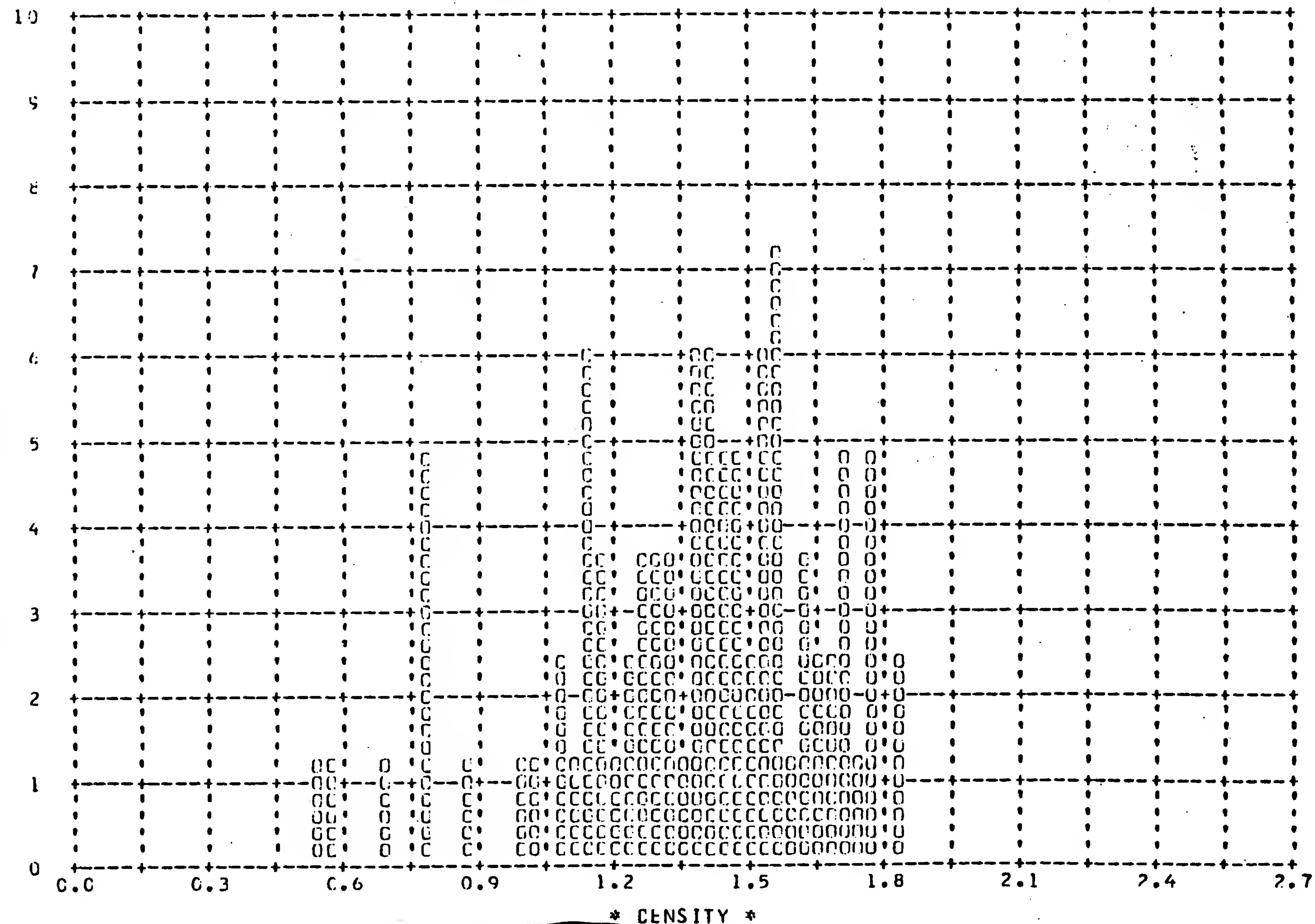

FIGURE A-4

MISSION * 1044-2 * INSTR * AFT * 1/16/68 FLCT OF D MAX * CLOUD * PROCESSING * DUAL GAMMA

ARITH MEAN * 1.66 * MEDIAN * 1.74 * STD DEV * 0.22 * RANGE * 0.73 TO 1.88 WITH 93 SAMPLES

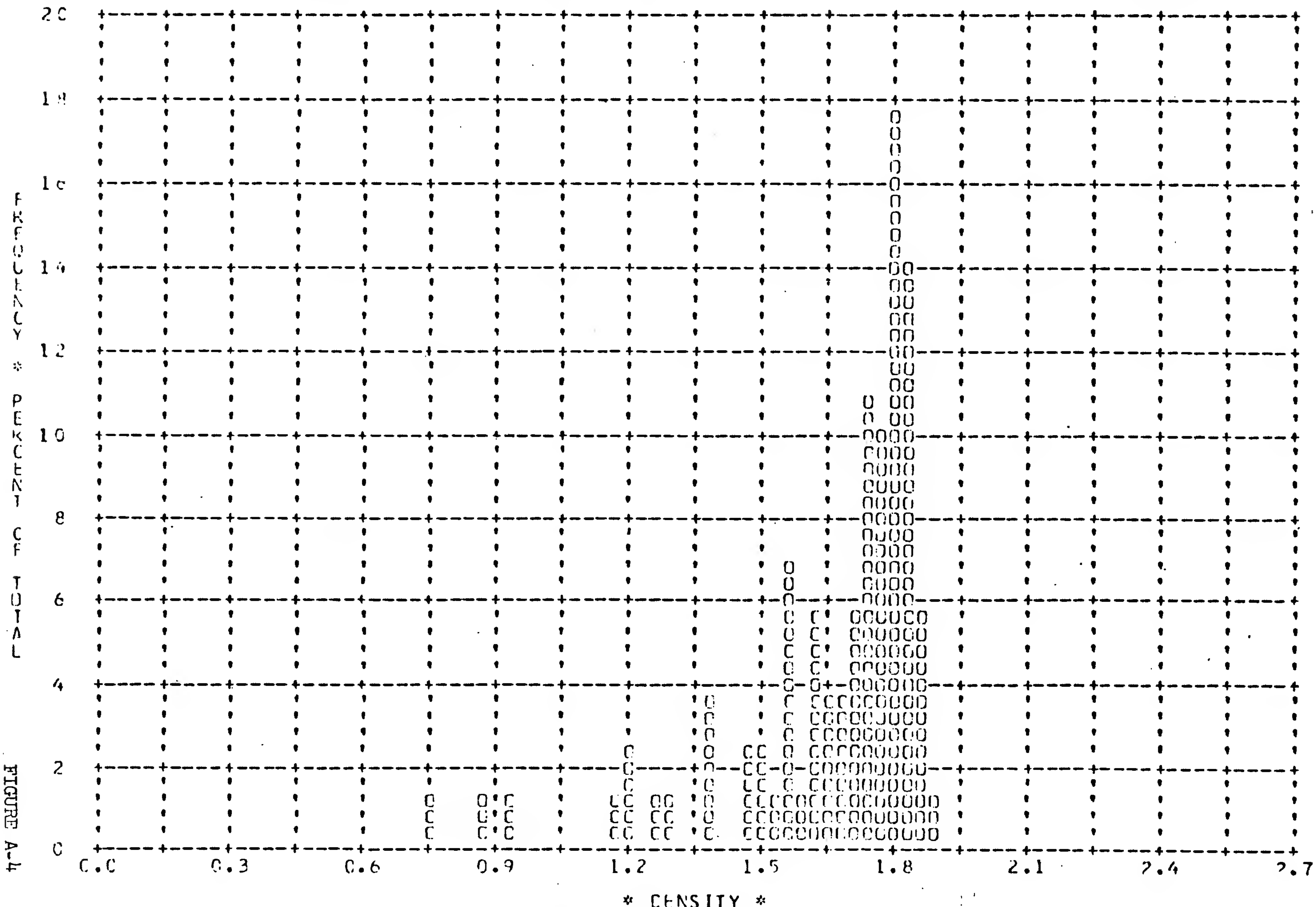

FIGURE A-4

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